bluefish444

User Manual

Mac OS X

SD|Fidelity
SD|Focus
SD|Prime

Monday, April 21, 2008

Contents

Limited Warranty

Bluefish444 warrants that this product will be free from defects in materials and workmanship for a period of three (3) years for category A products and two (2) years for category B products from the date of purchase. This warranty is provided only to customers who register the Bluefish444 serial number at the place nominated on the Bluefish444 homepage. If a product proves to be defective during the warranty period, Bluefish444, at its option, will either repair the defective product without charge for parts and labor, or will provide a replacement in exchange for the defective product.

In order to obtain service under this warranty, the customer must notify Bluefish444 of the defect before the expiration of the warranty period. The customer shall be responsible for packing and shipping the defective product to a designated service centre nominated by Bluefish444 with shipping charges prepaid. The customer will be responsible for shipping charges and duties payable on return of the repaired or replaced product to the customer's address. The customer must provide Bluefish444 with details of its nominated international courier company.

This warranty shall not apply to any defect, failure or damage caused by improper use or improper or inadequate maintenance and care. Bluefish444 shall not be obligated to furnish service under this warranty a) to repair damage resulting from attempts by personnel other than Bluefish444 authorized resellers to install, repair or service the product, b) to repair damage resulting from improper use or connection to incompatible equipment, c) to repair any damage resulting or malfunction caused by the use of non Bluefish444 parts or supplies, or d) to service a product that has been modified or integrated with other products when the effect of such a modification or integration increases the time or difficulty of servicing the product.

This warranty specifically shall not apply to Bluefish444 products purchased second hand
This warranty is given by Bluefish444 in lieu of any other warranties, expressed or implied. Bluefish444's responsibility to repair or replace defective products is the whole and exclusive remedy provided to the customer for any indirect, special, incidental or consequential damages.

Category A

SD|Greed, SD|Dual Link Pro, SD|Lite Pro, Iridium AV Pro, SD|Single Link Pro, SD|Ingest Pro

Category B

SD|Fidelity, SD|Prime, SD|Focus

Support Contact Details.

If you have any questions please contact support at support@bluefish444.com.
Email Support is free for the life of the warranty.
For phone support you must register your product at
http://www.bluefish444.com/support/techsupport.
In order to speed the resolution of your problem, please ensure that you provide the following information when contacting support.

- System configuration and manufacture, Mother board type and Devices installed.
- SCSI or RAID controller card type.
- Storage array configuration,
- OS version.
- Applications installed
- Bluefish444 Serial number and product type.

For phone support and access to other support resources, hardware configurations etc please register your card at the following website link;
http://www.bluefish444.com/products/warranty/register.asp

If an issue still exists please contact your integrator or reseller or contact
Bluefish444 technical support;

World support@bluefish444.com
North America support-usa@bluefish444.com
Europe support@bluefish444europe.com

Australasia / APAC
9am to 5pm
(GMT+10 hours)
ph +61 3 9682 9136
support@bluefish444.com

North America
9am to 5pm
(GMT -5 hours)
ph 1-866-314-7785 - Select option 2
support-usa@bluefish444.com

Europe
9am to 5pm
ph +44 (0)20 8868 2575
support@bluefish444europe.com

Introduction

SD|Fidelity & SD|Focus

SD| Fidelity and SD| Focus is the latest Single link PCI Express 1 lane video card dedicated to SD digital and analog video and audio from Bluefish444.

SD| Fidelity and SD| Focus brings the highest quality SD video and audio to the Window platforms.

The SD| Fidelity and SD| Focus supports 12 bit digital SDI I/O, capable of supporting the complete range of SDI connection standards up to 12 bit single link YUV (4:2:2).

Both cards support analog video interfaces use 12 bit and A/D and D/A converters which provide accurate conversion with extremely low noise. Analog sources acquired from Betacam|SP are preserved at the highest quality.

SD| Focus supports analog video output monitoring only.

SD| Fidelity and SD| Focus supports a range of memory formats such as 10 and 8 bit RGB/YUV uncompressed video and Apple QuickTime v210. Support for DV25 and DV50 codecs is also supported all within your windows systems. (Application dependant)

SD| Fidelity and SD| Focus provides the most comprehensive audio I/O support than any other card currently available today. both support balanced digital AES/ EBU, embedded I/O, unbalance S/P DIF I/O. Both cards support balanced XLR and unbalanced RCA analog audio output. The SD| Fidelity additionally supports analog audio inputs.

SD| Fidelity and SD| Focus support 24 bit processing at 48Hz and including hardware sample rate converters removing synchronization issues.
The sample rate converters are genuine, high order poly-phase interpolation filters rather than the minimalist algorithms found in some competing systems

SD| Fidelity and SD| Focus also includes RS 422 deck control and bi level sync genlock input

SD| Fidelity and SD| Focus comes with 5 connection ports for the 7 cables, providing flexible and customizable options that can be tailored to your specific requirements and cater to what ever source and monitoring equipment you have.

SD|Prime

SD| Prime is the latest PCI express1 lane card, dedicated to SD SDI digital and audio I/O.
SD| Prime brings the highest quality SD video and audio to Windows, Apple and Linux platforms.

SD| Single Link Pro supports a range of memory formats such as 10 and 8 bit RGB/YUV uncompressed video and Apple QuickTime v210. Support for DV25 and DV50 codecs is also supported all within your Apple power Mac or windows systems (Application dependant).

SD| Prime supports analog video I/O using 12 bit and A/D and D/A converters which provide accurate conversion with extremely low noise. Analog sources acquired from Betacam SP are preserved at the highest quality.

SD| Prime provides digital audio I/O support, SD| Prime supports balanced digital AES/ EBU, embedded I/O. SD| Prime supports 24 bit processing at 48Hz and includes hardware sample rate converters removing synchronization issues.

The sample rate converters are genuine, high order poly-phase interpolation filters rather than the minimalist algorithms found in some competing systems

SD| Prime also includes RS 422 deck control and bi level sync Genlock input

SD| Prime is a single 32 bit PCI card supporting 32 bit/64 bit PCI /PCI-X slots at 66/33 MHz bus speeds. SD| Prime comes with 5 connection ports for the 7 cables, providing flexible and customizable options that can be tailored to your specific requirements and cater to what ever source and monitoring equipment you have.

Feature Comparison

Hardware

	SD| Fidelity	SD| Focus	SD| Prime
Video Modes			
PAL 720 x 576 (4:3 and 16:9)	✓	✓	✓
NTSC 720 x 486 (4:3 and 16:9)	✓	✓	✓
Digital Video I/O Signal Formats			
8/10 bit SD SDI I/O	✓	✓	✓
Dual link 4:4:4, 4:4:4:4 (RGB) I/O			
Dual link 4:4:4, 4:4:4:4 (YUV) I/O			
4:2:2:4 Video and Key (YUV) I/O			
Single link 4:2:2 (YUV) Input	1	1	1
Single link 4:2:2 (YUV) Output	3	3	1
2 x Independent Video streams			
Routable Video channels			
Analog Video Input Signal Format			
12 bit Component YUV	✓		
12 bit Composite	✓		
12 bit S-Video	✓		
Analog Video Output Signal Format			
12 bit Component RGB	✓	✓	
12 bit Component YUV	✓	✓	
12 bit Composite	✓	✓	
12 bit S-Video	✓	✓	
Digital Audio I/O Signal Format			
6 channels of AES/EBU (Balanced, XLR)	✓	✓	✓
8 Channels of AES-3id (Unbalanced, BNC)	✓	✓	✓
16 Channels of embedded audio per SDI	✓	✓	✓
Analog Audio Input Signal Format			
2 channels (Balanced, XLR)	✓		
2 channels (Unbalanced, RCA)	✓		
Analog Audio Output Signal Format			
2 channels (Balanced, XLR)	✓	✓	
2 channels (Unbalanced, RCA)	✓	✓	
File Formats.			
QuickTime, Cineon, DPX, AVI, Targa, TIFF	✓	✓	✓

	SD| Fidelity	SD| Focus	SD| Prime
Hardware Features			
2 x General Purpose I/O ports			
LTC I/O ports			
Internal RS 422 Serial Ports	1 port	1 port	1 port
External RS 422 Serial Ports	1 port	1 port	1 port
Audio sample rate converters	✓	✓	✓
Real-time hardware color space conversion	✓	✓	✓
Real time hardware overlay for internal keying	✓	✓	✓
Built-in safe area, safe title and letterbox generator	✓	✓	✓
Genlock	✓	✓	✓
Onboard Memory.			
Memory	32MB	32MB	32MB
PCI Interface			
PCI 32 bit 66 MHz or PCI 32 bit 33 MHz			
Compatible with all PCI and PCI-X 64/32 bit Slots.			
PCI Express 1 - lane (4 - lane compatible)	✓	✓	✓

Software

Feature Control

The Bluefish Feature Control provides ancillary features and low level control of the Bluefish444 products. Depending on the type of card you have installed will determine the functions available in the utility.
This Tab panel applies to all Bluefish444 Products installed on the Apple MacOS

The Feature Control is the control interface that runs independently to the applications using the Video card.

It provides access the lower level functions of the Bluefish444 hardware that are not directly controlled by supported 3rd party applications.

The Feature Control controls signal format mode switching, scaling, analog or digital I/O selection, audio channel signal selection, letter box and sync input to name a few.

The Feature Control controls will be different for each card installed or selected. The feature app also monitors current input and output modes and monitors current pixel or memory format the Bluefish444 card is in.

The Feature Control, depending on the installed Bluefish444 hardware will have different feature and tabs made available. For example the SD Greed card will have an extra analog feature button as compared to video cards that do not support analog I/O.

The Feature Control is covered in more detail later in this manual.

Bluefish444 Feature Control
- Ability to save/open settings as a profile
- Ability to adjust settings while other applications are using the card
- Input preview panel
- Improved AppleScript support to allow automated configuration of card settings
- Undo/Redo
- Notes panel to document your current settings using fully formatted and internationalized text and images
- Displays driver and card firmware version

Final Cut Pro Studio

Bluefish444 provides support for the Apple Final Cut Studio consisting of;
- Final Cut Pro 6.0.3
- Motion 2
- Sound Track Pro

Final Cut Pro 6

Supported Features

- Support for NTSC and PAL.
- Support for 8 bit video.
- Support for 10 bit video.
- Support for video and audio capture (8 bit and 10 bit NTSC and PAL)
- Support for Apple Uncompressed 4:2:2 8 and 10 bit QuickTime formats
- Support for Apple DV, DVCPRO, DVCPRO50 and 8 bit ARGB formats
- Support for 6 channel playback of AES/EBU digital audio (6 channel cable required.)
- 64 bit RGB support for Adobe After Effects
- QuickTime video output support for Adobe After Effects
- User presets for Final Cut Studio
- Mirroring on desktop for Final Cut Studio
- Bluefish444 feature control application for safe picture, safe title (letterbox on supported cards)
- Driver support for key channel available on supported hardware
- Adobe After Effects RAM Real Time RAM preview
- Real Time playback within Apple Movie Player
- Support for G5 machines
- Non-real-time preview during capture
- Internal Keyer
- Support for Final Cut Pro's RT Extreme software real-time effects in Apple Uncompressed 4:2:2 sequence
- Support for Offline mode - capture and playback of Photo JPEG clips, capture to Apple's Offline RT format

Hardware Requirements:

- ATTO UL5D PCI e SCSI card with version 4.2.0 drivers and 5th September 2007 firmware
- For deck control, the built-in RS-422 serial port.

Refer to the web site at www.bluefish444.com for further details.

Motion 2

Motion offers true film-quality output, GPU accelerated performance, and an astounding toolset. Now you can create advanced motion graphics with drag-and-drop ease, startling clarity, and unprecedented color fidelity — all in real time.
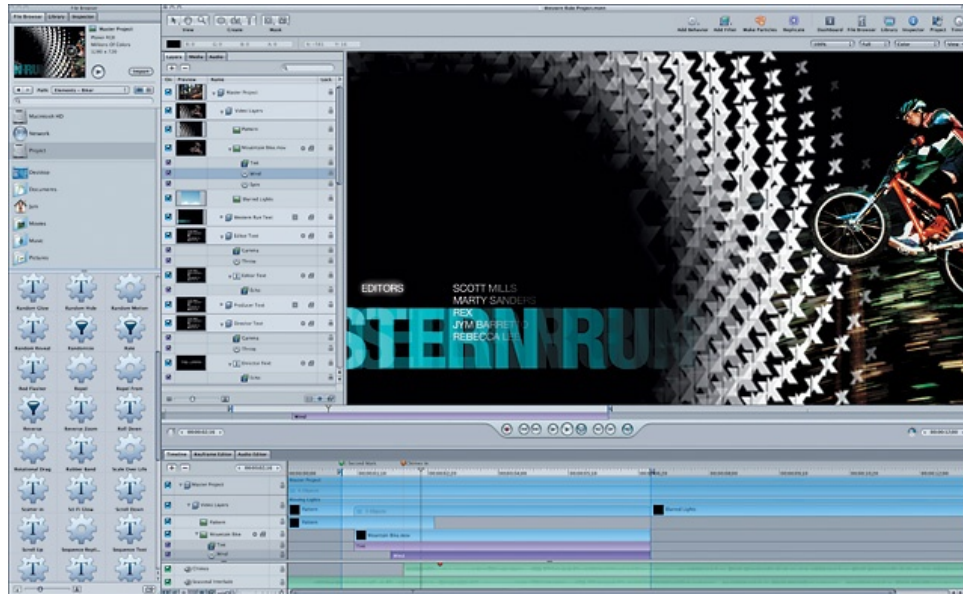
Soundtrack Pro

Apple's revolutionary audio editing and sound design application lets you express your sonic vision quickly and economically. With an innovative Action-based waveform editor, multi track editing, as well as repair and restoration capabilities, you can design and edit audio with total creative flexibility.
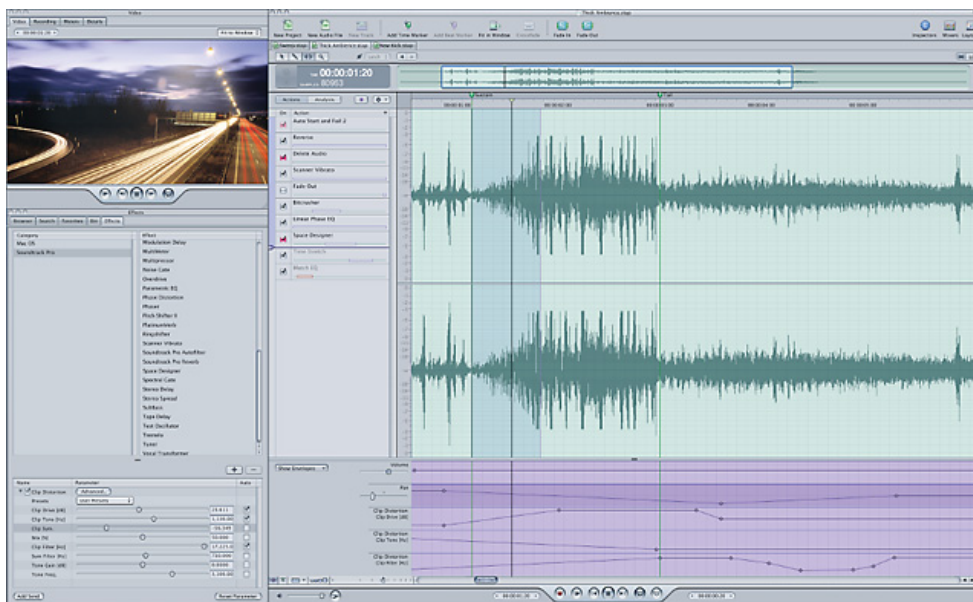
Adobe After Effects CS3

(Application Software not included)

Animate your ideas. Adobe® After Effects® 7.0 software helps you create compelling motion graphics and blockbuster visual effects with efficiency, precision, and infinite variety. Take advantage of unmatched integration with other Adobe software, flexible 2D and 3D compositing, and hundreds of effects and Animation Presets to bring a new dimension to your film, video, DVD, and Macromedia® Flash® productions.
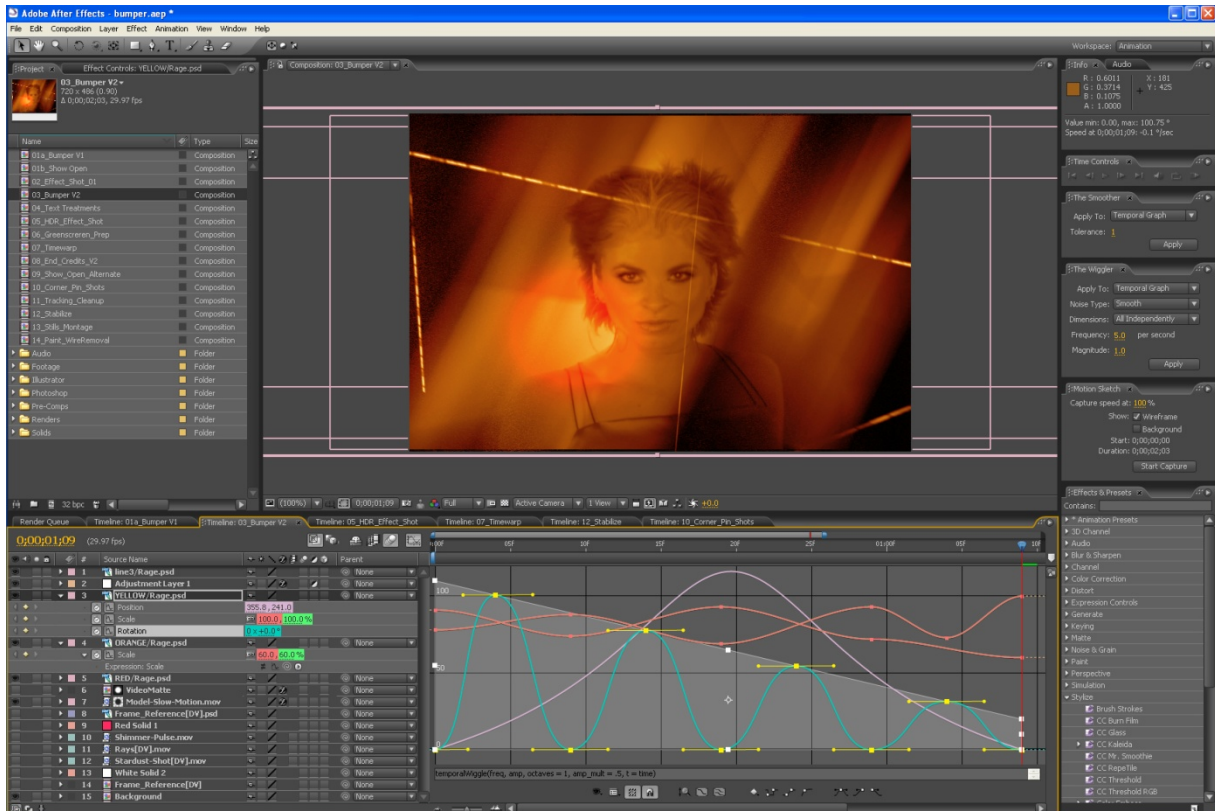
- SD Broadcast real time monitoring
- Real-time playback via RAM player
- 8 and 10 bit frame buffer support
- 8 and 10 bit project mode support

Photoshop CS3

(Application Software not included)

Adobe® Photoshop® CS2 software, the professional image-editing standard and leader of the Photoshop digital imaging line, delivers more of what you crave. Groundbreaking creative tools help you achieve extraordinary results. Unprecedented adaptability lets you custom-fit Photoshop to the way you work. And with more efficient editing, processing, and file handling, there's no slowing you down.

- SD broadcast monitoring.
- Action driven output, fully customizable via actions interface.
- Photoshop import from SD /Analog video source.

Combustion 4

Bring your imagination to life and get your work done faster with the easy-to-use Combustion® interface, its efficient workflow, and extensive toolset. Autodesk® Combustion® 4 software is an all-in-one professional compositing application designed to meet the needs of the world's most demanding artists.

- SD Broadcast real time monitoring
- Real-time playback via RAM player feature

What's in the Box

SD| Fidelity	SD| Focus
PCI e 1 lane Card.	PCI e 1 lane Card.

- CDROM Software and documentation including Symmetry application, Feature Application control panel, Adobe Production studio plug-ins for Premiere Pro, After Effects, Photoshop and Audition, QuickTime 10 bit YUV V210 Codec.
- Warranty and Reference card cable connection guide.
- 7 cables consisting of the following;

Digital Video I/O	1 x Mini Din 9 pin cable with 6 BNC Labeled 'DVID SDI', 'A/B/X', 'IN/OUT', 'Genlock'	
Analog Video I/O	1 x Mini Din 9 pin cable with 6 BNC consisting of 2 sets of 3 Labeled; AVID 'Y/G/CVBS', 'U/B/Y', 'V/R/C' *SD| Focus does not support Analog Video input.	
Digital Audio S/P DIF I/O	1 x HD 15 pin with 8 BNC consisting of 4 pairs Labeled 'DIG AUDIO IN', DIG AUDIO OUT', '1/2', '3/4', '5/6', '7/8'.	
Digital Audio AES/EBU I/O	1 x HD Sub 15 pin with 3 male & 3 female paired XLR Labeled 'DIG AUDIO IN', 'DIG AUDIO OUT', '1/2', '3/4', '5/6	
Analog Audio XLR I/O	1 x Mini Din 9 pin cable with 2 channels XLR Labeled 'AN AUDIO IN', AN AUDIO OUT', 'Left', 'Right' *SD| Focus does not support Analog Audio input	
Analog Audio RCA I/O	1 x Mini Din 9 pin cable with 2 channels RCA Labeled 'AN AUDIO IN, AN AUDIO OUT', 'Left', 'Right' *SD| Focus does not support Analog Audio input	
Deck Control	Mini Din 8 pin RS 422 to 232 deck control cable for RS 422 ports.	

SD| Prime

PCI e 1 lane card

Digital Audio S/P DIF I/O	1 x HD 15 pin with 8 BNC consisting of 4 pairs Labeled 'DIG AUDIO IN', DIG AUDIO OUT', '1/2', '3/4', '5/6', '7/8'	
Digital Audio AES/EBU I/O	1 x HD Sub 15 pin with 3 male & 3 female paired XLR Labeled 'DIG AUDIO IN', 'DIG AUDIO OUT', '1/2', '3/4', '5/6	
Deck Control	Mini Din 8 pin RS 422 to 232 deck control cable for RS 422 ports.	

System Requirements

System Configuration

Minimum requirements

Card	SD| Focus
	   SD| Fidelity **SD| Prime**
Slot Type	PCI e 1 lane Card.

Item	Minimum **System Support**
Macintosh Operating System	Apple Mac OS X 10.5.2
QuickTime	QuickTime 7.4.5
Editing/Production Software Suite	Final Cut Pro 6.0.3 Adobe Photoshop CS 3 Import/Export plug-in's After Effects CS3, Sound Booth, Motion 2
System	Mac Pro Quad 2.66GHz (2GB RAM)
System Drive	SATA (1 internal HD)
RAID Interface	Fiber Channel or SCSI
Disk Storage	4 SCSI Hard Drives External RAID

Slot Installation Requirements

PCI e
Mac Pro Quad
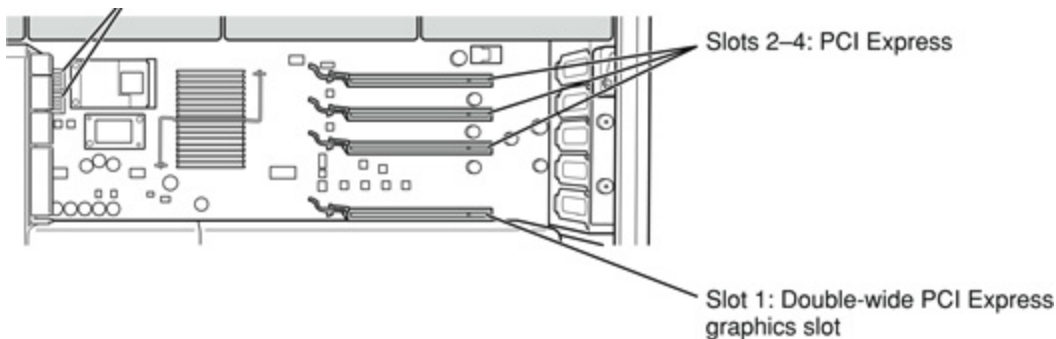
Bluefish444 PCI E card.
Installed in slots 4 or 3

Atto UL5D SCSI Card installed in Slot 2

Storage Requirements

The SD product range is primarily an uncompressed capture and playback card providing an unprecedented level of quality on the Windows, Linux and Apple Mac OS X systems. Bluefish444 recommends that your storage system be able to provide and sustain a data rate up to 45 MB per sec for single stream applications and at least up to 90 MB for dual stream and above for multiple stream solutions.

Storage Capacity Guide

FORMAT	Transfer Rate MB/sec	Storage Requirement in GB/Hour	Hours of Storage Per Terabyte of Disk
10 bit YUV Uncompressed	30	101	9.9
8 bit Uncompressed Standard Definition	21	76	13.1
DV50 Standard Definition	6.3	23	43.4
DV25 Standard Definition	3.1	11	90.0
Photo JPEG	2.5	9	111

Cable Connection

bluefish444

SD| Fidelity
SD| Focus

Analog Audio (1)
RCA 2 Ch

Analog Audio (2)
XLR 2 Ch

RS 422 Deck Control

Analog Video

Digital Audio (1)
8 Ch S/P DIF (BNC)

Digital Audio (2)
6 Ch AES/EBU (XLR)

Digital Video & Genlock

SD| Prime

RS 422 Deck Control

SDI A OUT

SDI A IN

Digital Audio (1)
8 Ch S/P DIF (BNC)

Digital Audio (2)
6 Ch AES/EBU (XLPCI
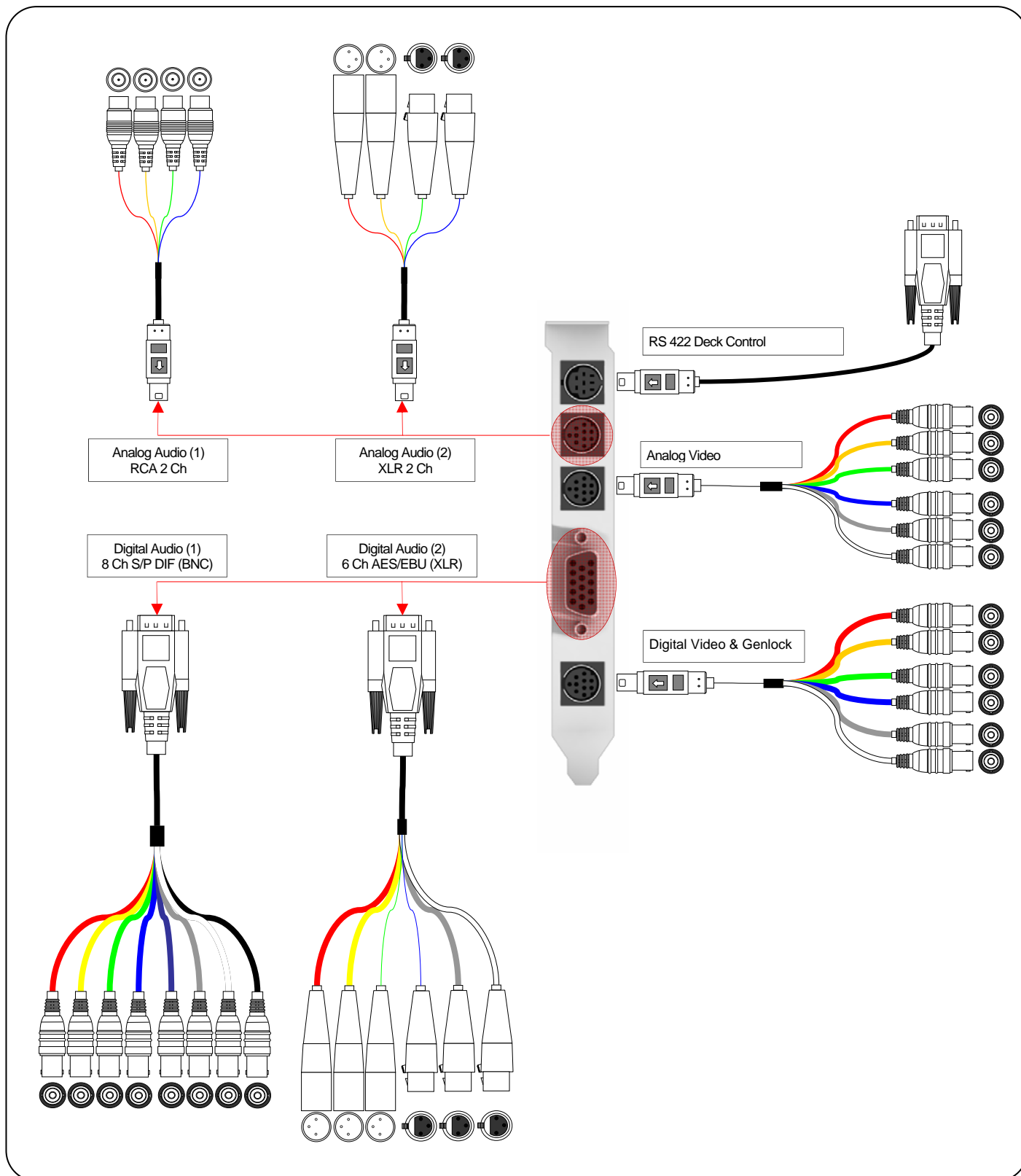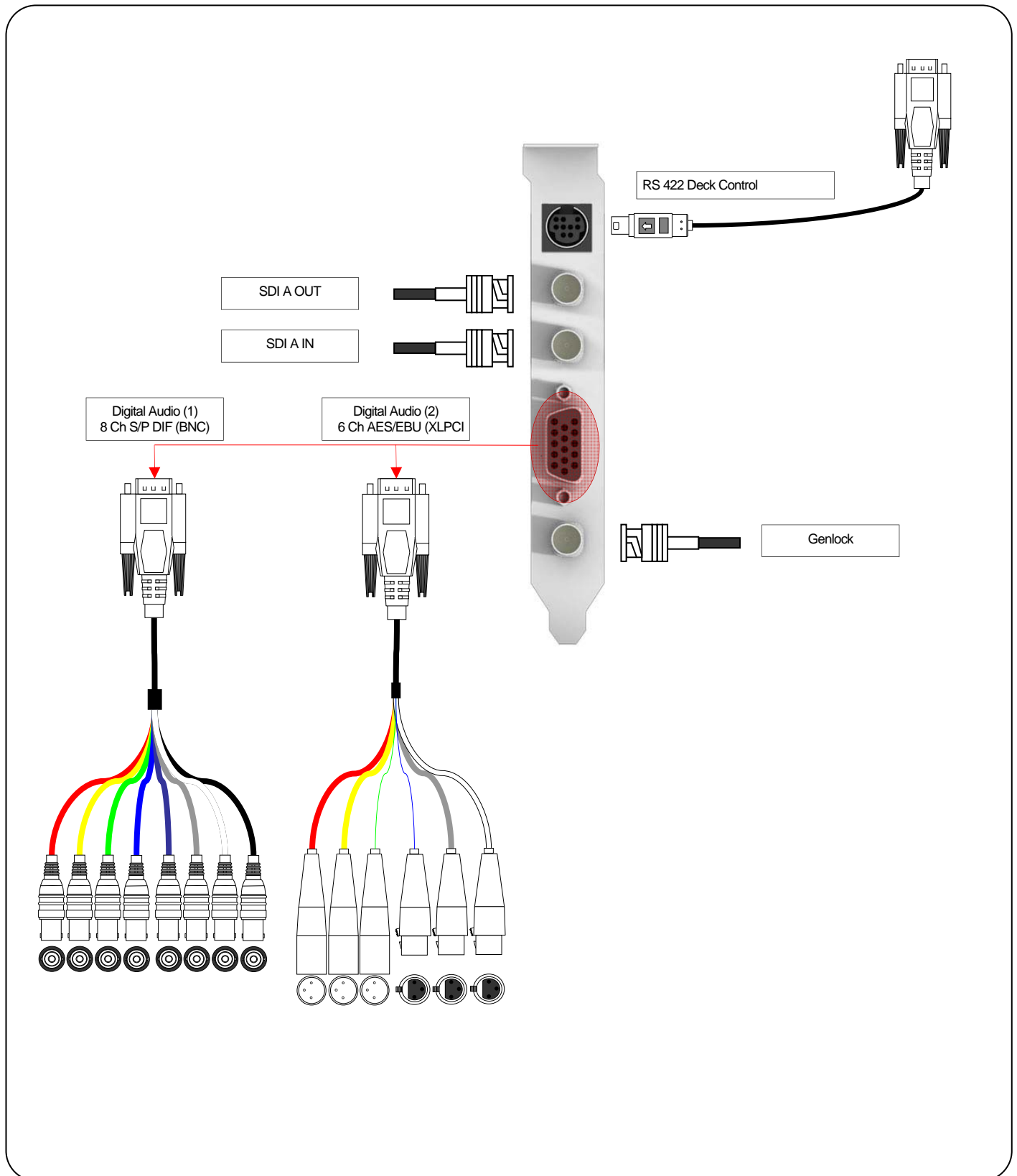
Genlock

Cable Types

Digital Video I/O & Genlock

Mini Din male 9 pin

(DVID 1) SDI 'A' OUT
(DVID 2) SDI 'B' OUT
(DVID 3) SDI 'A' IN
(DVID 4) SDI 'B' IN
(DVID 5) SDI 'X' OUT
GENLOCK
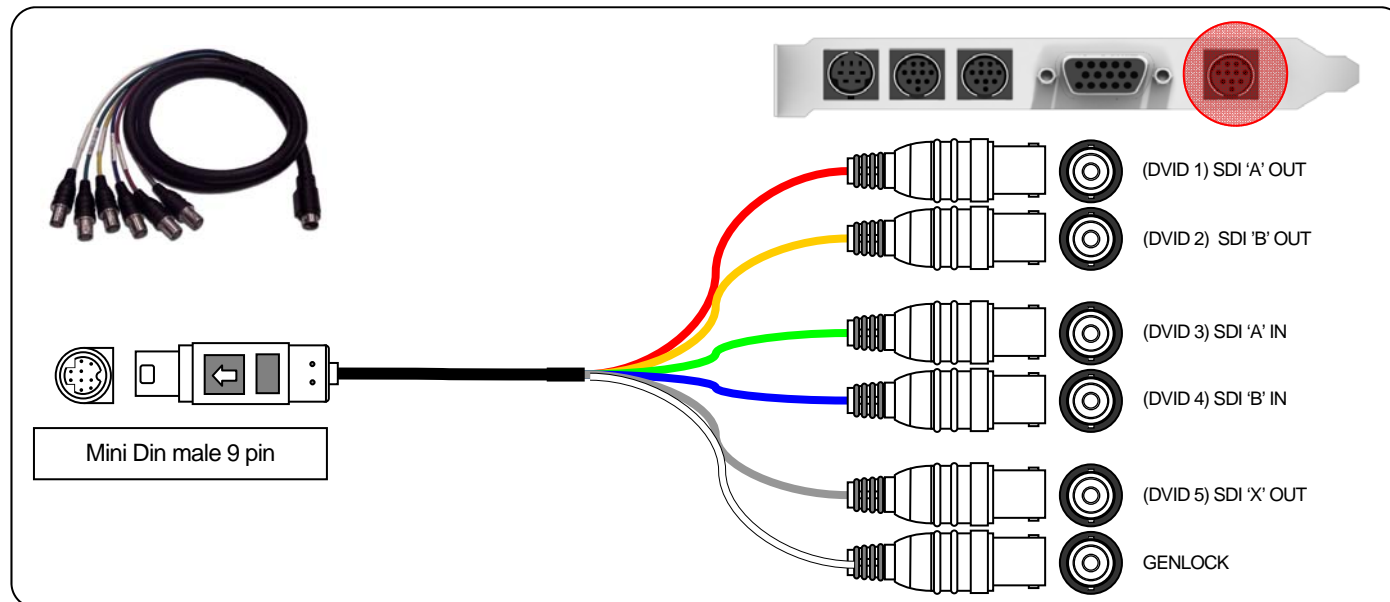
SD| Greed
Supports two SD SDI inputs and two SDI outputs. SD| Greed supports independent inputs and outputs allowing for a combination of two simultaneous capture and playback streams.
The digital video cable can be customized to support a range of SDI dual link and single link modes. The auxiliary SDI can be either used as a 3rd output which can be configured to monitor dual link modes as a single link 4:2:2 connection.
SDI inputs and outputs support a total of 16 channels of embedded audio, 8 channels per SDI
Reference input is bi Level via supported by 1 x BNC bi level Sync. All card outputs are unconditionally stable. SDI outputs always meets SMPTE jitter specifications with or without Genlock.

SD| Fidelity and SD| Focus
Supports the SDI A NI, OUT and Genlock connectors only

Type	Supported Mode	Label	Cable Color
2 X SDI Inputs (BNC)	Dual Link 4:4:4, 4:4:4:4, Video + Key, 4:2:2:4, Dual independent, 2 X 4:2:2	DVID 3 SDI "A" In DVID 4 SDI "B" In	GREEN BLUE
2 X SDI Outputs (BNC)	Dual Link 4:4:4, Video + Key, Dual independent,	DVID 1 SDI "A" Out DVID 2 SDI "B" Out	RED YELLOW
Genlock (BNC)	Genlock	Genlock	WHITE

Analog Video I/O
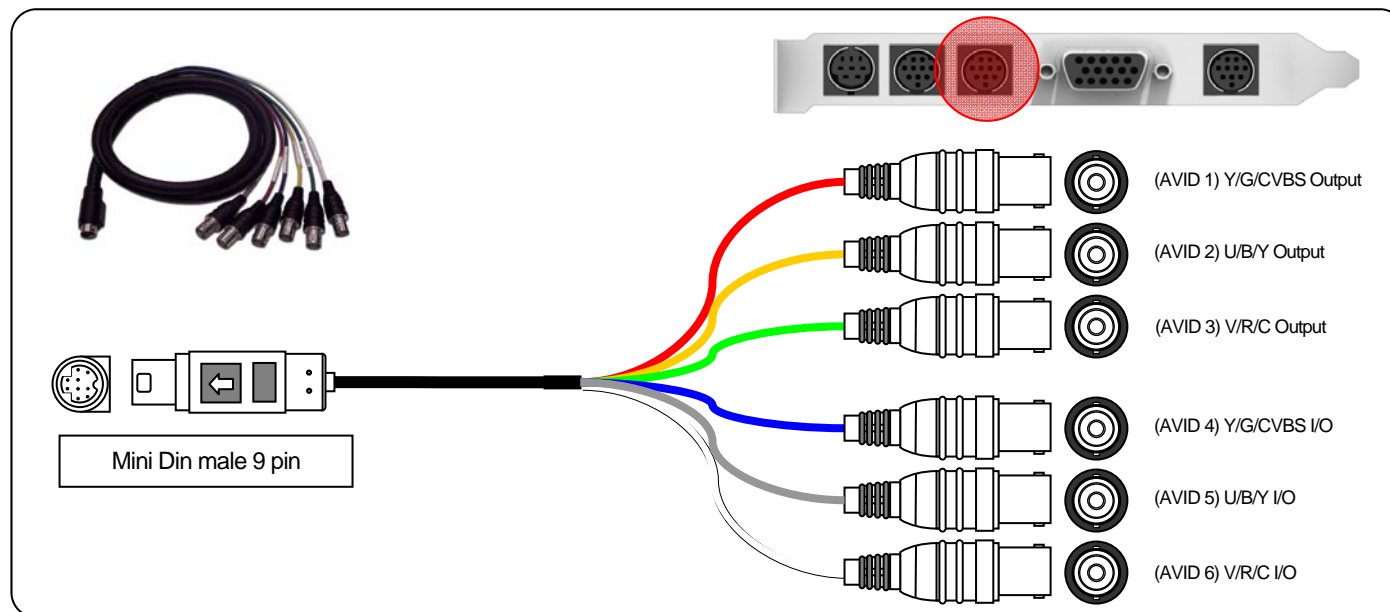
The analog video cable can support a range of input and output combinations. Combined with the SDI I/O cables the SD| Greed provides effective broadcast quality conversion between digital to analog and analog to digital. SD| Greed's analog video allows you to mix output combinations with SDI, Component, S Video, or, SDI, Component, S Video and composite, etc.

Digital to analog and analog to digital conversion is done at 12 bits maintaining the highest quality signal accuracy and during the conversion process.

Label	Cable Color	Analog Video Connection Options					
		Output			Input		
		Component RGB	Component YUV	Composite SVIDEO	Component RGB	Component YUV	Composite & SVIDEO
AVID 1	Red	G	Y	CVBS	-	-	-
AVID 2	Yellow	B	U	Y	-	-	-
AVID 3	Green	R	V	C	-	-	-
AVID 4	Blue	G	Y	CVBS	-	Y	CVBS
AVID 5	Grey	B	U	Y	-	U	Y
AVID 6	White	R	V	C	-	V	C

RGB/YUV = Component, YC = Composite, CVBS = S Video

Digital Audio Option 1 - S/P DIF BNC 8 Channels I/O, Unbalanced
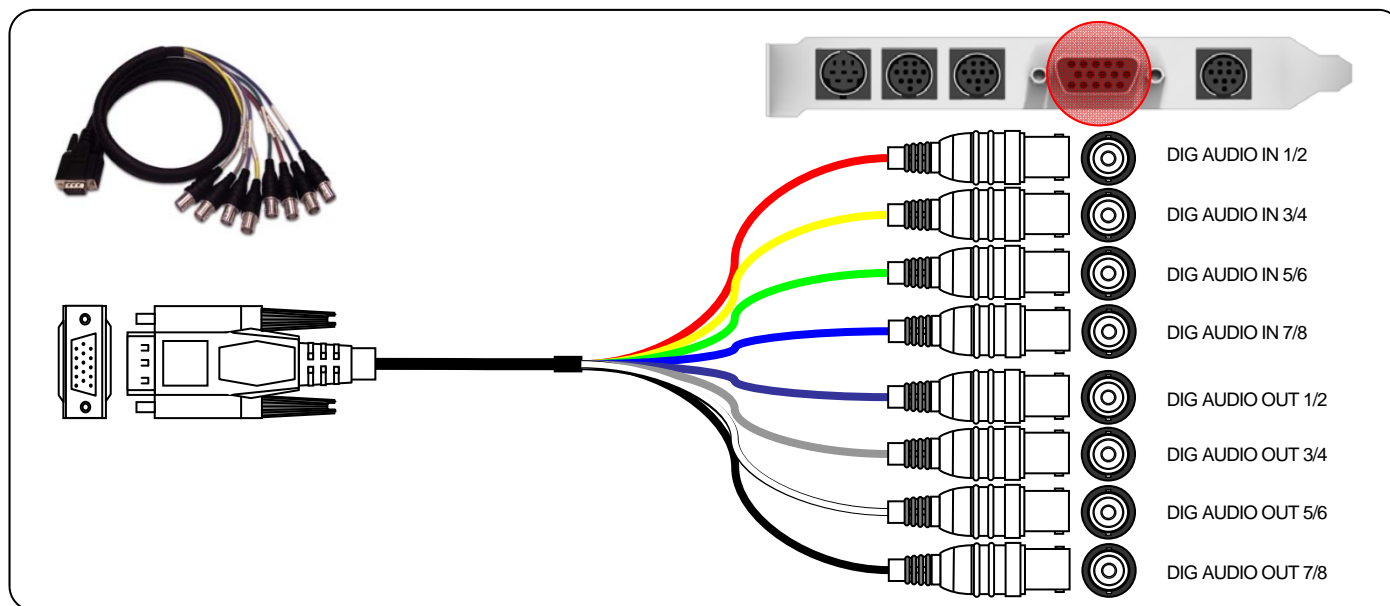
SD| Greed and Single Link Pro supports 8 BNC connectors. Each BNC connector supports a pair of pair channels. There are 4 pairs for input and 4 pairs for output.
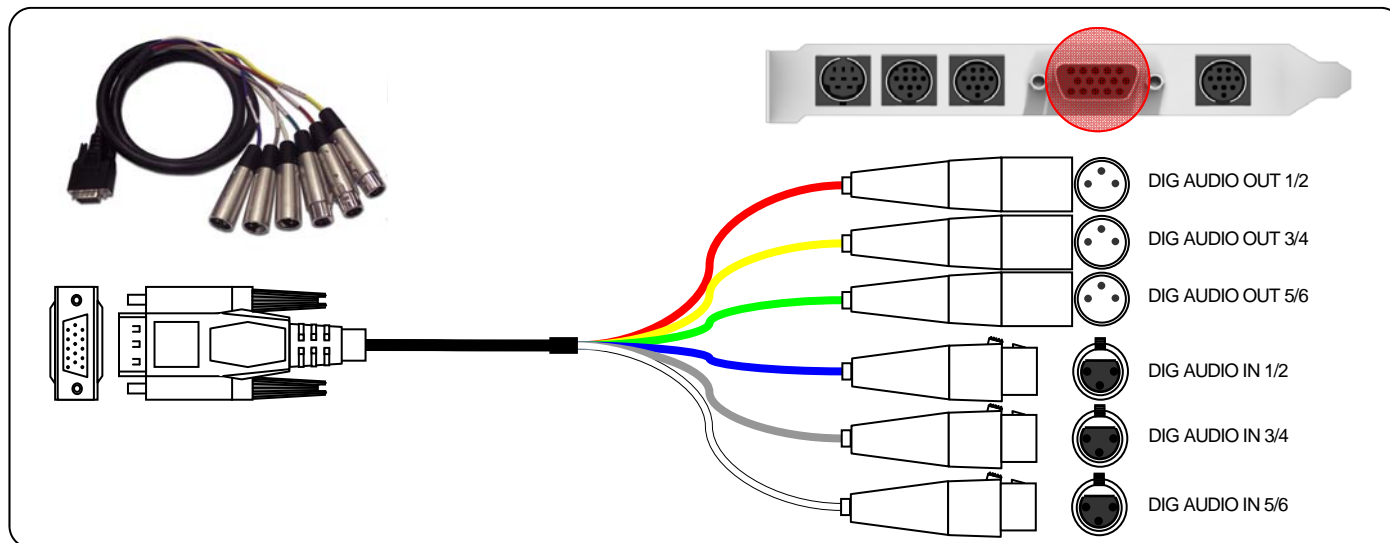
Note: These BNC connections produce digital signals and can not be used with analog speakers.

Type	Supported Mode	Label
8 Channels BNC	S/P DIF Unbalanced	DIG AUDIO IN/OUT 1/2, 3/4, 5/6, 7/8

Digital Audio option 1 is supported by all cards

Digital Audio Option 2 - AES/EBU XLR 6 Channels I/O, Balanced


The SD product range provides 6 XLR connectors, supporting AES/EBU balanced digital audio. 3 female XLR pairs provides 6 channels of input and 3 male XLR pairs provides 6 channels of output.

Note: These XLR connections produce digital signals and can not be used with analog speakers

Type	Supported Mode	Label
6 Channels XLR, Balanced	AES/EBU	DIG AUDIO IN/OUT 1/2, 3/4, 5/6

Digital Audio option 2 is supported by all cards

Analog Audio Option 1 - RCA Dual channel, Unbalanced
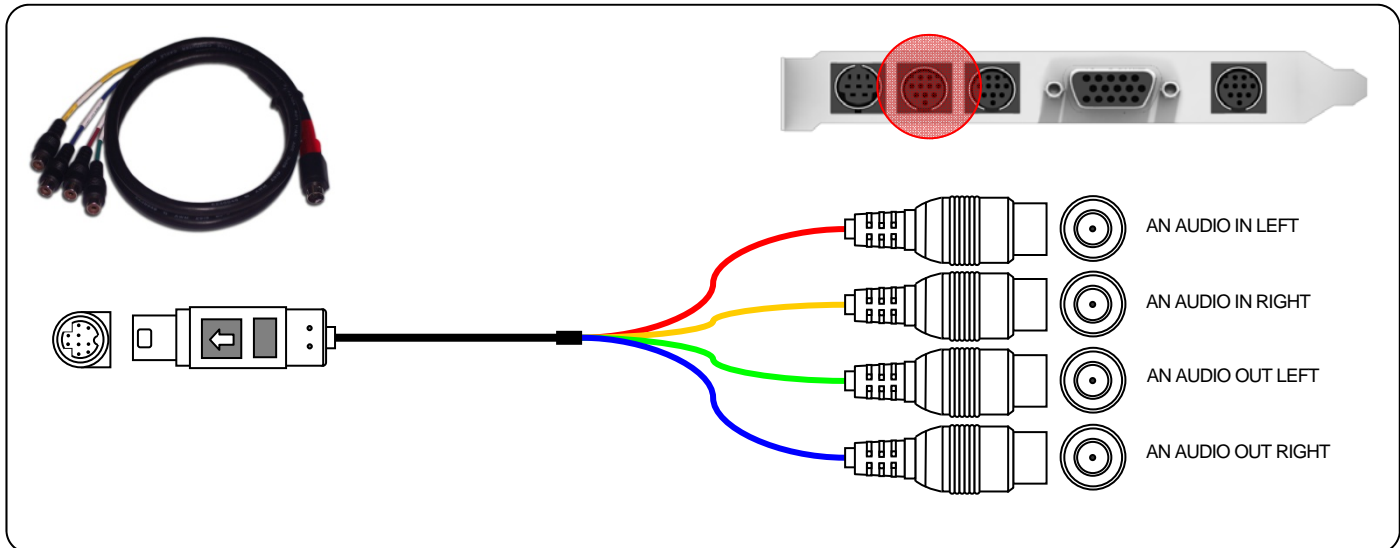
SD| Greed provides 2 RCA, unbalanced analog input and 2 RCA unbalanced analog output connectors, one for each channel.

The connectors are RCA-style ("phono") jacks which allow you to connect into a range of analog monitoring devices such as phono jack speakers and headphones for in expensive monitoring of audio.

The Inputs may be connected to domestic Hi Fi components such as CD Players etc

Type	Supported Mode	Label
Analog, unbalanced	RCA	AN Audio IN/OUT, LEFT/RIGHT

## Analog Audio Option 2 - XLR Dual channel, Balanced
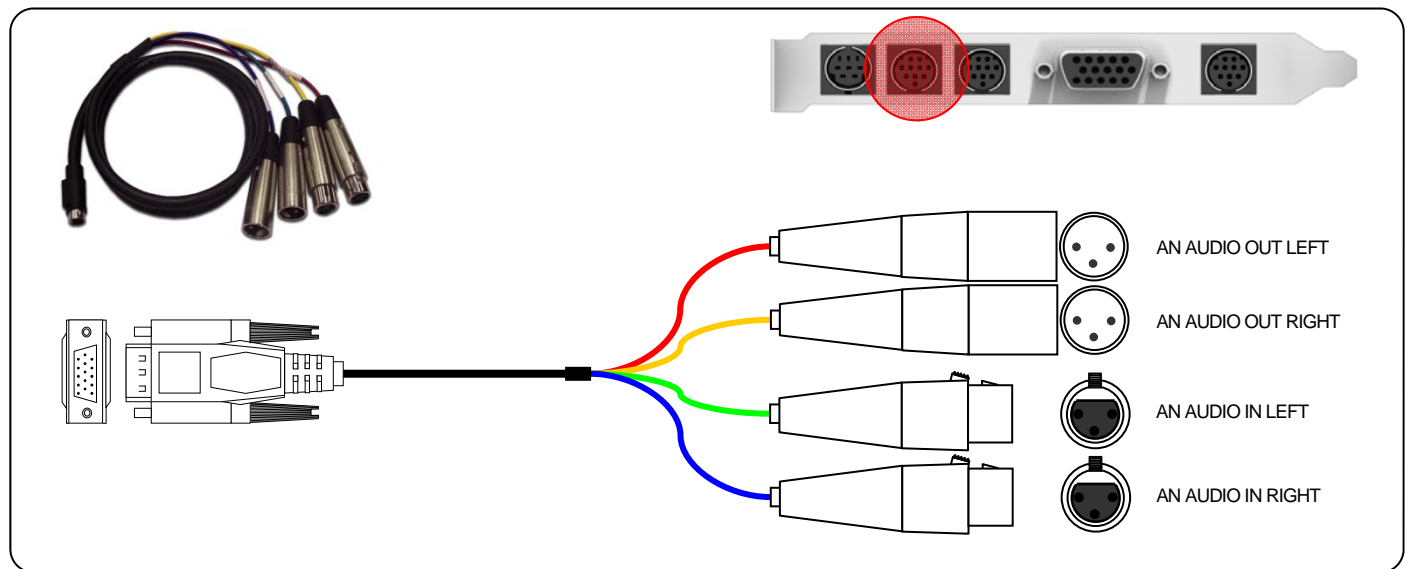
SD| Greed provides 2 balanced analog input and 2 balanced analog output connectors, one for each channel.

The connectors are XLR male for input and female for output. Allows you to plug into a range of professional analog monitoring, recording, processing, and transmission equipment that support the standard XLR connections

Type	Supported Mode	Label
Analog , balanced	XLR	AN Audio IN/OUT, LEFT/RIGHT

Deck Control
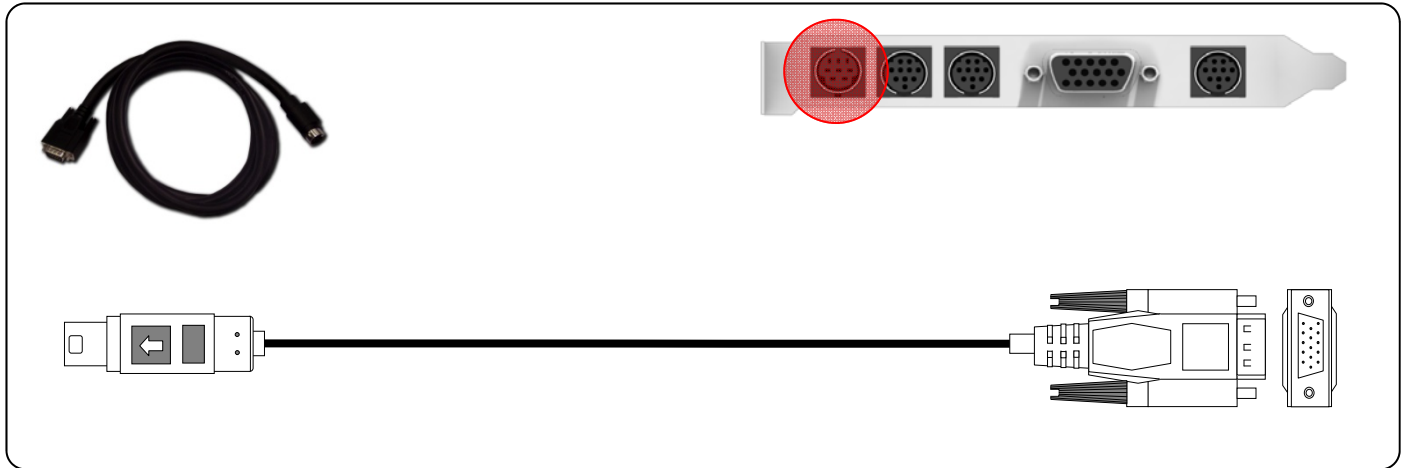
A Male DB8 connector provides connection between the Bluefish444 card and decks, DDRS, cameras and other supported devices using RS422 SMPTE (Sony) protocol.

Installation

Installation Check List.

Make sure you have the following installed prior to installing your SD| Greed, SD| Fidelity and SD| Focus card.

Requirements.

Item	Minimum
Operating System	Apple Mac OS X 10.5.2
QuickTime	QuickTime 7.4.5
Editing/Production Software Suite	Final Cut Pro 6.0.3 After Effects CS3 Adobe Photoshop CS3
System	Mac Pro Quad 2.66GHz (2GB RAM)
Host Controller	ATTO UL5D PCI e SCSI card with version 4.2.0 drivers and 5th September 2007 firmware
Disk Storage	2 SCSI Hard Drives RAID 0

Installation Steps

- Prepare your system.
- Install 3rd party applications.
- Install QuickTime version 7.4.5 or above
- Installing the Bluefish444 hardware.
- Connecting to the outside world
- Driver Installation
- 3rd Party Software Setup
  - o Final Cut Pro 5
  - o After Effects

Prepare your system.

Ensure you have installed the latest OS versions, driver updates for your system.
Please refer to the certified hardware guide section or the readme document for more information.
http://www.bluefish444.com/support/compatibility/hardware/

Install 3rd party applications.

It is recommended to pre install supported applications before running the Bluefish444 installer.
IF you install 3rd party applications after running the Bluefish444 Max OS installer. You will be required to re install .
This will install plug ins and presets for the 3rd party applications

Install QuickTime version 7.4.5 or above

Download and install the latest QuickTime installer available at the following site.

Installing the Bluefish444 Hardware

Bluefish444 provides detailed information on tested and certified hardware configurations for a range of common motherboards and computer systems.

Please refer to this free informative section available on our web site at the following
Link; http://www.bluefish444.com/support/compatibility/hardware/

- Place your system in an easily accessible place that has sufficient lighting. It is not recommend to insert the card in an awkward position that will increase the chances of a poorly contacted or incorrectly inserted card.
- Ensure your hands are clean and free of dirt and fluid.
- Remove your systems protective case.
- Make sure you are earthed and discharge any static build up before handling the Bluefish444. With your hand, touch the metal frame of the PC case to discharge any static electricity you may have built up.
- Remove the power cable from your system.
- Identify a free PCI slot as outlined in the hardware configuration for your Bluefish444 certified motherboard or system.
- Remove the PCI slot aperture for the corresponding slot the SD| Greed card will be inserted into.

    For more detailed information on correct slots for your motherboard or system type, please refer to the Bluefish systems and hardware support section at; http://www.bluefish444.com/support/compatibility/hardware/

    NOTE; Certain slots on motherboards share the same bus. Motherboards supporting PCI-X 133 MHz slots usually are on a separate bus and will not be affected by inserting the SD| Greed card.
    For a G5 or Intel/AMD motherboards, you should always have the controller card and the SD| Greed on a separate bus.

    For systems with an onboard SCSI controller such as the HP 8200/9300, the 100 MHz bus is shared with the onboard SCSI, so it is wise to place the SD| Greed in the PCI - X 133 MHz slot (Slot 4 on the G5), so as to not affect the performance of the SCSI or FC controller card.

Card Installation

Remove the Bluefish card from the antistatic bag..
Hold the card by the PCI shield top and at the top of the PCB at the opposite end of the PCI shield. This will reduce any chance of any damage of the bluefish444 card circuitry.
Do not touch the components on the PCB, do not touch the PCI slot mating edge.
(See handling region diagram below).

Insert the card into the correctly chosen slot by firmly pressing down on the metal PCI shield and the edge of the PCB.
Secure the card with a screw or PCI clip, depending on the chassis and computer system you are using.
Replace the system chassis cover and connect the power to your system.

Areas to apply force
On edge of PCB and
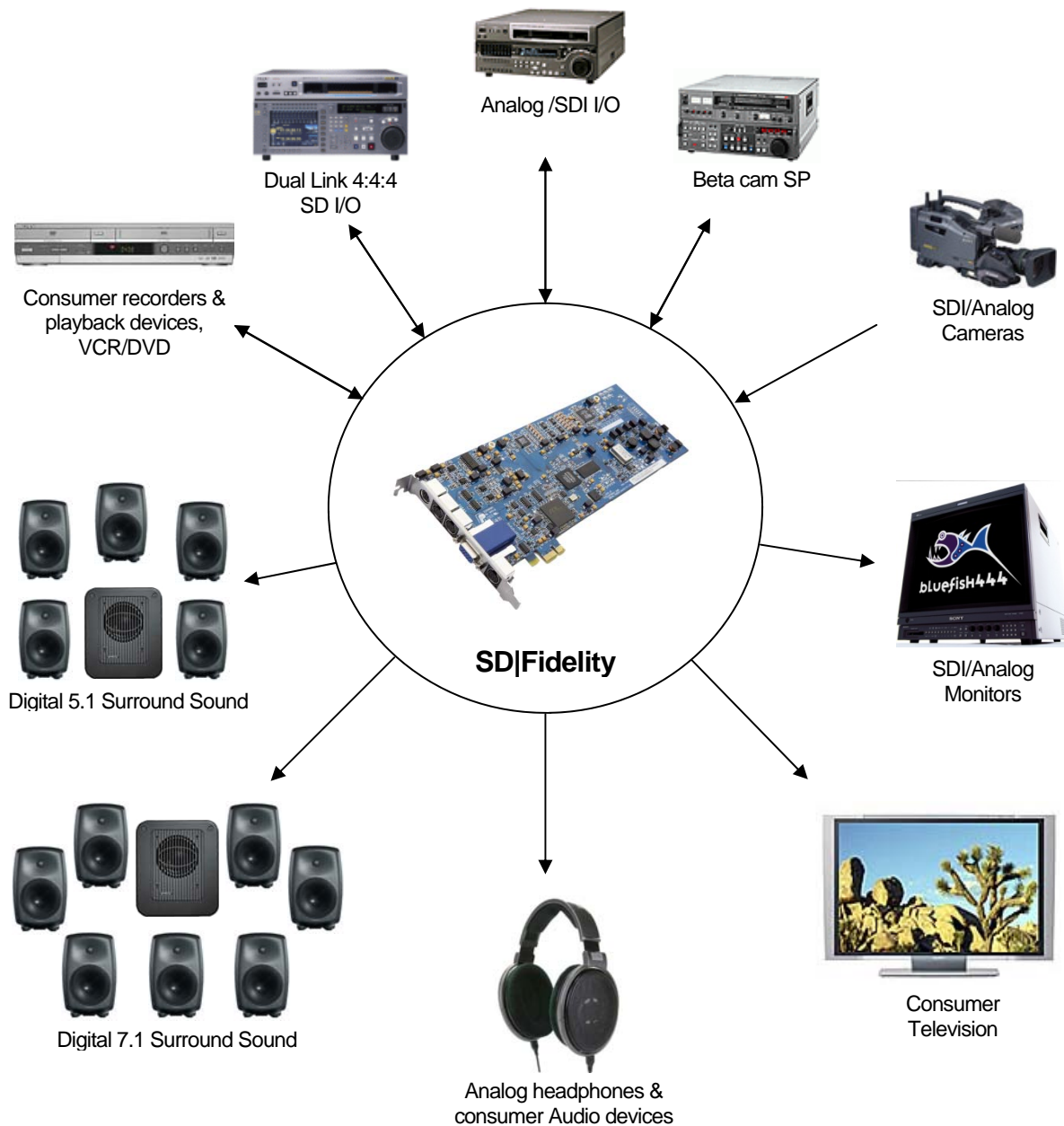PCI shield

Handling region

No handling region
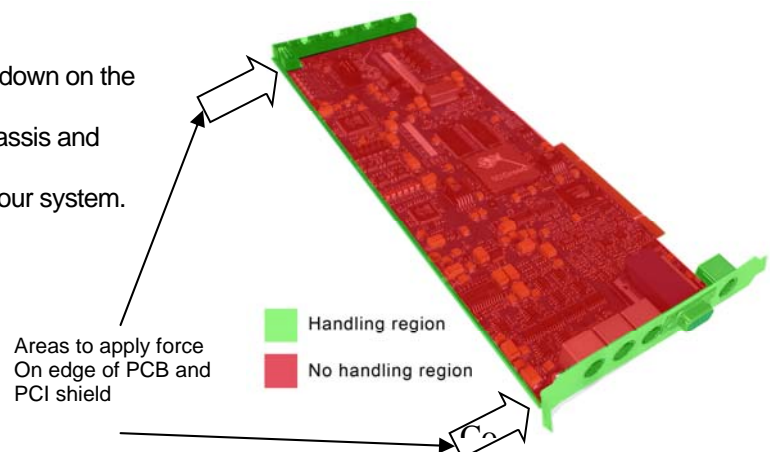
Connecting to the outside world

The Bluefish SD product range is an extremely versatile Video/Audio I/O card that can connect to a range of devices. The range of connection workflows that can not be covered by this manual instead we will focus on two typical connection work flows commonly used in the professional broadcast industry.

Taking advantage of video cards with Analog video and audio I/O, provides a powerful analog to digital converter in one PCI card.

This removes the need for expensive external devices for video and/or audio conversion.

Analog /SDI I/O

Dual Link 4:4:4
SD I/O

Beta cam SP

Consumer recorders &
playback devices,
VCR/DVD

SDI/Analog
Cameras

SD|Fidelity

SDI/Analog
Monitors

Digital 5.1 Surround Sound

Digital 7.1 Surround Sound

Analog headphones &
consumer Audio devices

Consumer
Television

Typical Connection Workflow 1

The following example is a typical workflow you might use if your source is SDI but you have analog monitoring for video and audio and two channels of audio are required.

- SDI video I/O
- Digital XLR audio I/O 4 Channels of Audio
- Analog video and audio monitoring

Your source and master is Digital SDI for video and Digital Audio by AES/EBU XLR.
Your monitoring is Analog component and analog audio.
If your deck supports embedded audio you could I/O the audio via the SDI and monitor the 4 channels via XLR or S/P DIF.

Cable Connection Guide

(DVID 1) SDI 'A' OUT Input of Deck

Genlock

(AVID 1) Y/G/CVBS Output

SDI Monitor

DIG AUDIO IN 1/2

DIG AUDIO IN 3/4

DIG AUDIO OUT1/2

DIG AUDIO OUT 3/4

ANG AUDIO OUT LEFT

ANG AUDIO OUT RIGHT

Analog Audio Monitoring
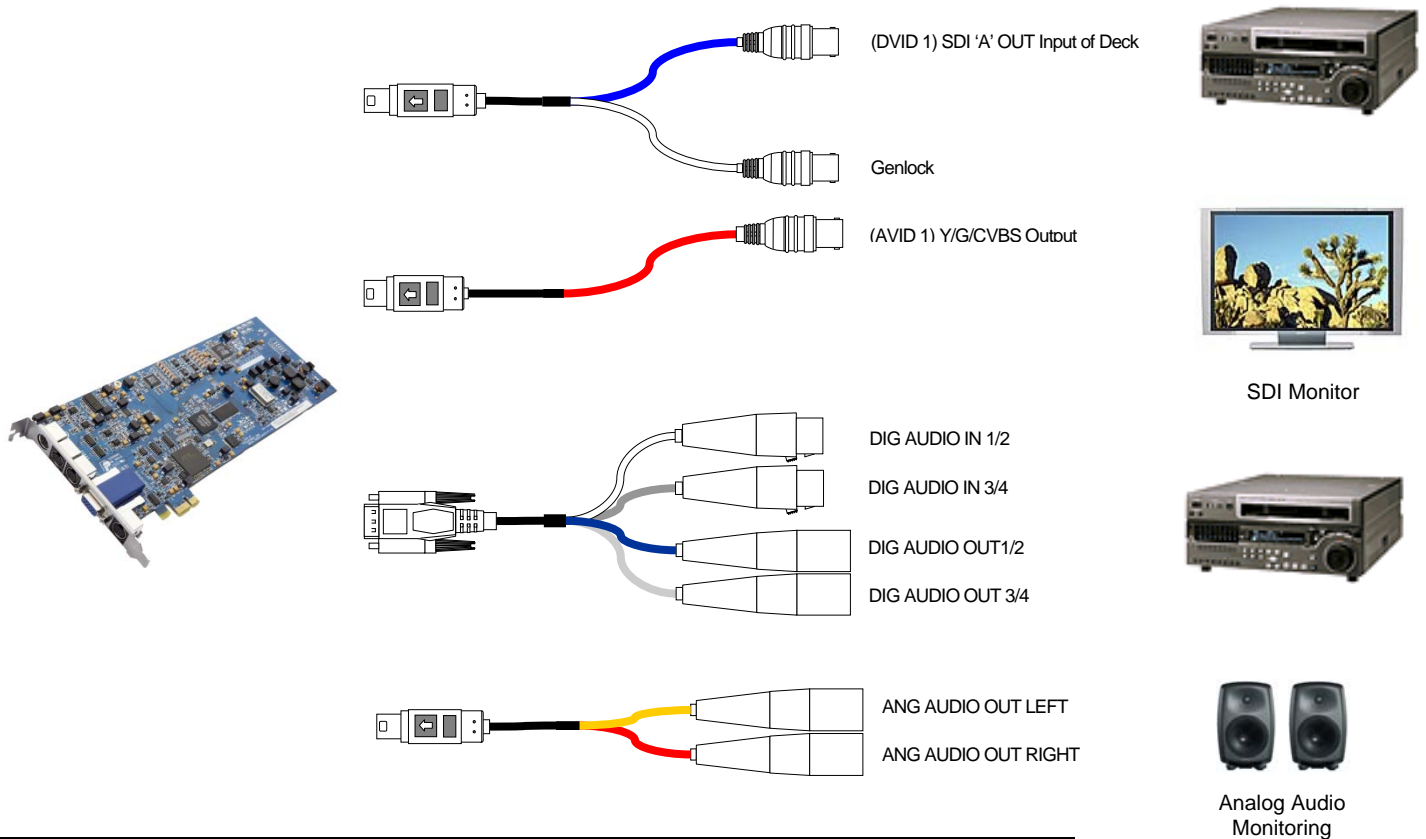
Feature application Settings
• Digital audio routing channels 1 & 2 to Analog left and right • Analog Video output set to Component

Typical Connection Workflow 2

The following example is a typical workflow you might use if you wish to edit and monitor with 6 channels of audio for surround sound 5.1 editing and ingest Digital Video via SDI and Audio via AES XLR

- SDI video I/O
- Digital XLR audio I/O 6 Channels of Audio
- Analog video monitoring - component
- Genlock

Your source and master is Digital SDI for video and Digital Audio via AES/EBU XLR .
Your monitoring is Analog component video and analog audio

If your deck supports embedded audio you could I/O the audio via the SDI and monitor the 4 channels via XLR or S/P DIF.

Cable Connection Guide

(DVID 1) SDI 'A' OUT

(DVID 3) SDI 'A' IN

SDI deck
6 Channels audio

GENLOCK

(AVID 4) Y/G/CVBS I/O

Analog Video Monitor

DIG AUDIO OUT 1/2

DIG AUDIO OUT 3/4

DIG AUDIO OUT 5/6

DIG AUDIO IN 1/2

DIG AUDIO IN 3/4

DIG AUDIO IN 5/6

Digital 5.1 Surround Sound
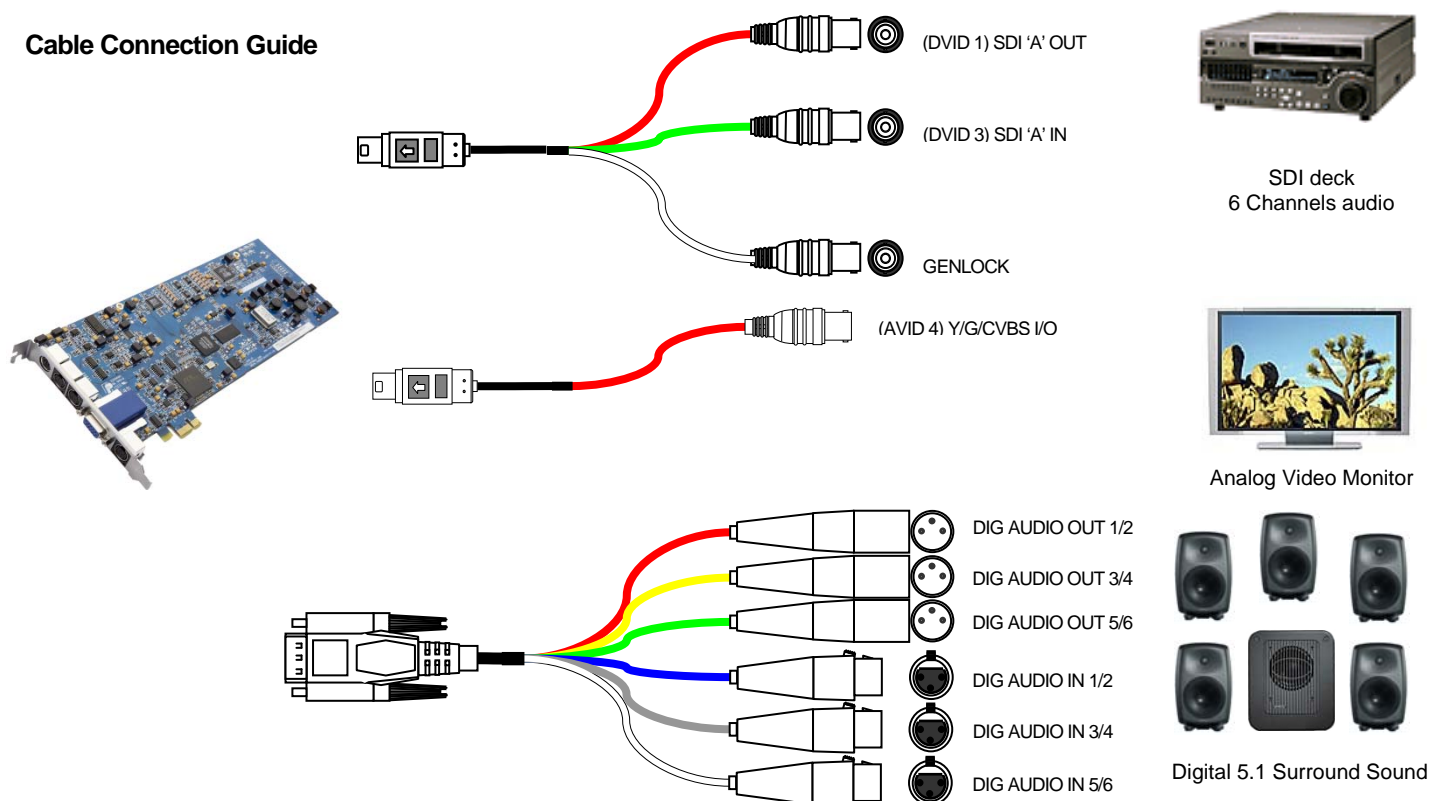
Feature application Settings
Audio Input set to AES Audio Monitoring set to AES Video input set to SDI Video Analog output set to Component.

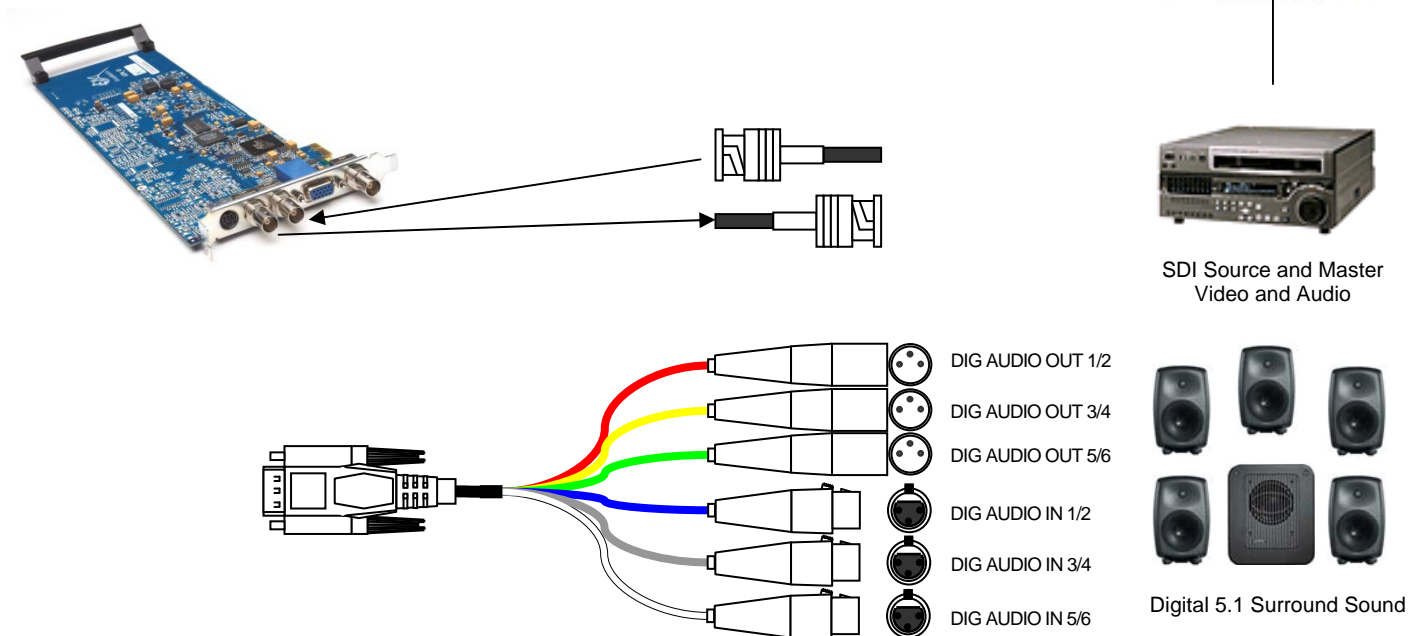## Typical Connection Workflow 3

The following example is a typical workflow you might use if you wish to ingest Analog Audio and Video and master the SDI video and audio without the use of external 3rd party converters.

- SDI video Output with 8 channels of embedded audio
- Analog Audio XLR input two channels
- Analog video Input Component
- Genlock

Your source is an analog deck providing video and Digital Audio via XLR .
Your master is a Digital SDI deck.

Cable Connection Guide

(DVID 3) SDI 'A' IN

(DVID 5) SDI 'X' OUT

GENLOCK
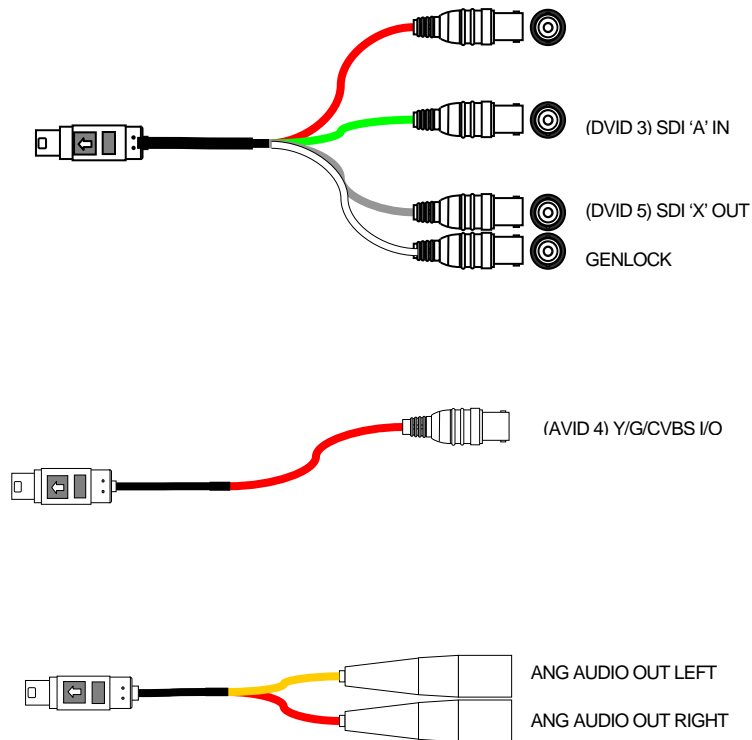
Video and Audio SDI
Master Monitor

SDI Monitor

(AVID 4) Y/G/CVBS I/O

Analog Video and Audio
source

ANG AUDIO OUT LEFT

ANG AUDIO OUT RIGHT

Analog Audio
Monitoring

Typical Connection Workflow 4

The following example is a typical workflow you might use if you wish to ingest Digital Audio and Video

- SDI video Input and Output with 8 channels of embedded audio
- Genlock

Cable Connection Guide

DIG AUDIO OUT 1/2

DIG AUDIO OUT 3/4

DIG AUDIO OUT 5/6

DIG AUDIO IN 1/2

DIG AUDIO IN 3/4

DIG AUDIO IN 5/6

SDI Monitor

SDI Source and Master Video and Audio

Digital 5.1 Surround Sound

Driver Installation

Driver installation is very much straight forward.
At this point you should have a Bluefish444 card installed in the relevant slot, in a system that meets the requirements as outline in the previous sections.
You should also have QuickTime and relevant 3rd party application pre installed.

Installations can be categorized in the following;

- New Installations.
- Updating Previous Installations.

New Installations

1. Insert the 'Bluefish444 Installer CD-ROM' into your Macintosh.
2. Navigate to the drivers folder and Mac OS X section.
3. Open the DMG file to mount the installer disk image.
4. Run the installer application from the disk image.

It's recommended that you refer to the downloads section on the Bluefish444 website for more recent updates and drivers.http://www.bluefish444.com/support/downloads/default.asp

5. Ensure you download the correct driver installer for your card type,

NOTE: If you are using Final Cut Pro™ or Adobe After Effects you need to run this installer after you have installed these applications on your system.

It is advisable to have only a single copy of Final Cut Pro™ on your system.

6. Select 'Standard Install'

This will install the Bluefish444 drivers, update the firmware for the video card and add the Bluefish Feature Control application for operating the cards ancillary features such as analog signal routing, analog signal levels, key modes, letter box generator and genlock etc

Updating Previous Installations

The latest Bluefish444 MAX OSX installer will detect any older Digital voodoo or Bluefish444 installers and provide and option to uninstall them.

Feature Application

About the Feature Application.

The Bluefish444 feature application allows you to control and monitor your Bluefish444 Video I\O card.
It can be used as a diagnostic tool and provides an interface to enable or disable extended features independently of your current software application. The Bluefish444 feature app provides at a glance a range of information about what video mode and pixel format your card is currently operating in.

Main Control Interface.

The Bluefish444 feature application interface supports all of the Bluefish444 product range. Depending on the card type you have installed, the Bluefish444 feature app will make available certain features. For example the SD| Greed SDI/analog video I/O card supports both dual link SDI I/O as well as Analog I/O. When the feature application is launched you will be presented with two section tabs, the main feature app section and an extra Analog BNC property tab Bluefish444 Feature App section.
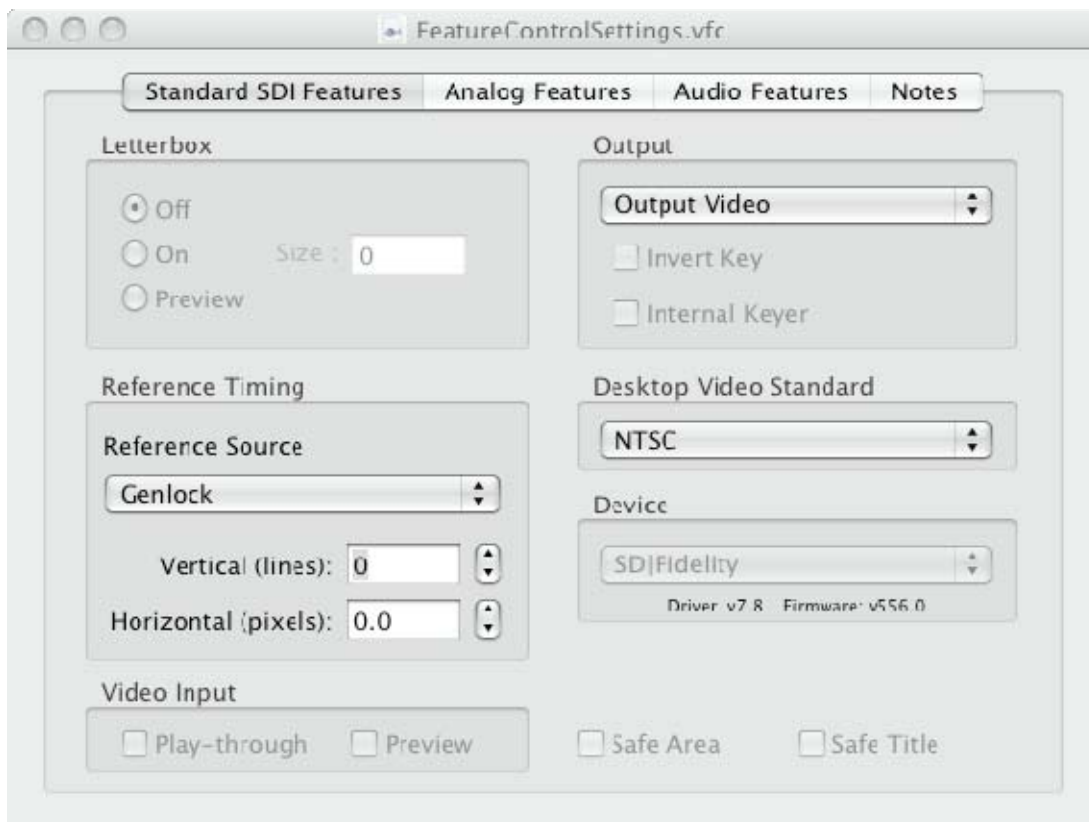
Letter Box

This section controls the letter box feature that Bluefish444 hardware supports.
Letter box blanks the top and the bottom of your viewing area is much like what you see with widescreen 16:9 movies displayed on your 4:3 monitor.
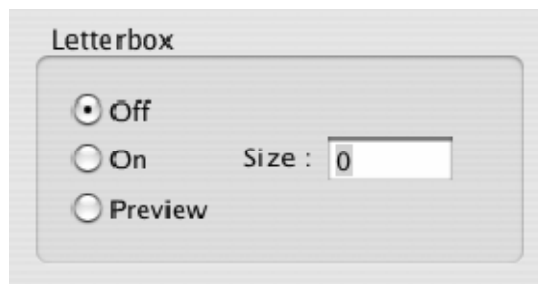
Reference Timing

This section allows you to introduce timing delays to the selected Genlock source received by the Bluefish444 cards.
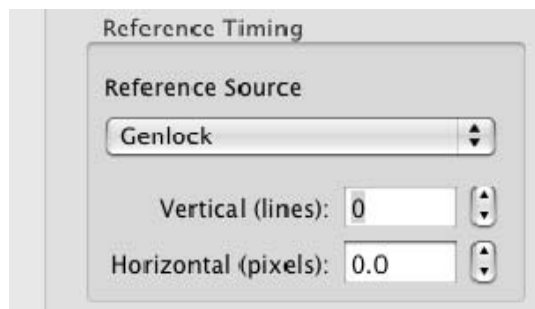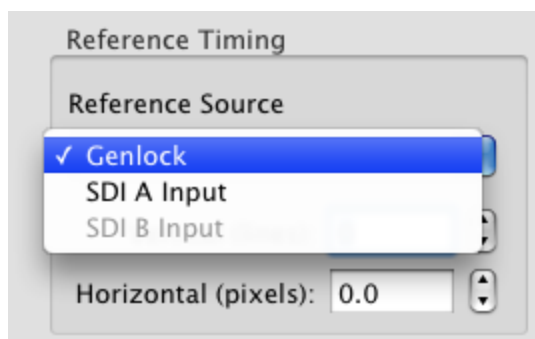
Vertical (lines):
Adjusts the vertical timing delay in lines.

Horizontal (pixels
Adjusts the horizontal timing delay in pixels.

Video Input
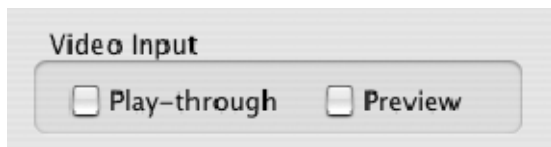
Play Through
The video is passed through the video card for monitoring of SDI and analog output.
This is very useful when altering analog properties without having to load a 3rd party application.
NOTE; Make sure you switch 'play through' off before using any video capture applications.

Preview
Opens up a small preview windows to the right for desktop monitoring of the input signal.

Output

This section controls the output of the SDI BNC connectors for cards that have multiple Outputs such as the SD| Greed
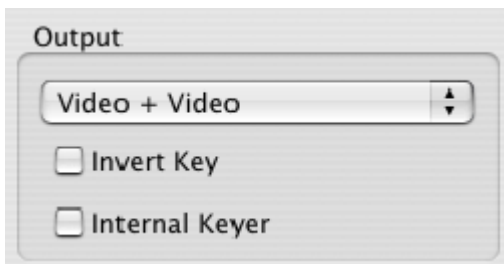
• Video + Video
• Video + Key

The Single Link pro supports Video output only

Invert Key
Inverts the key output when in Video and Key mode

Desktop Video Standard

This allows you to select the video mode of the second desktop.

Bluefish444 Device
Provides crucial information on current driver and firmware currently used by your Bluefish444 hardware.

Safe Area
Enables and disables safe area region on the video output.

Safe Title
Enables and disables safe title region on the video output.

Analog Features

The Analog Features tab panel will only be present when you have Analog/SDI capable cards such as the SD| Flex, SD| Greed and SD Single link Pro card installed.

Saving Presets.
You can save your properties and configurations by selecting Save As from the file menu.
This provides you the ability to save custom presets for different projects saving time re adjusting and provides the ability to share presets.

Sections related to analog features are;

- Output Analog Properties
- Input Analog Properties
- Signal Routing

Output Analog Properties
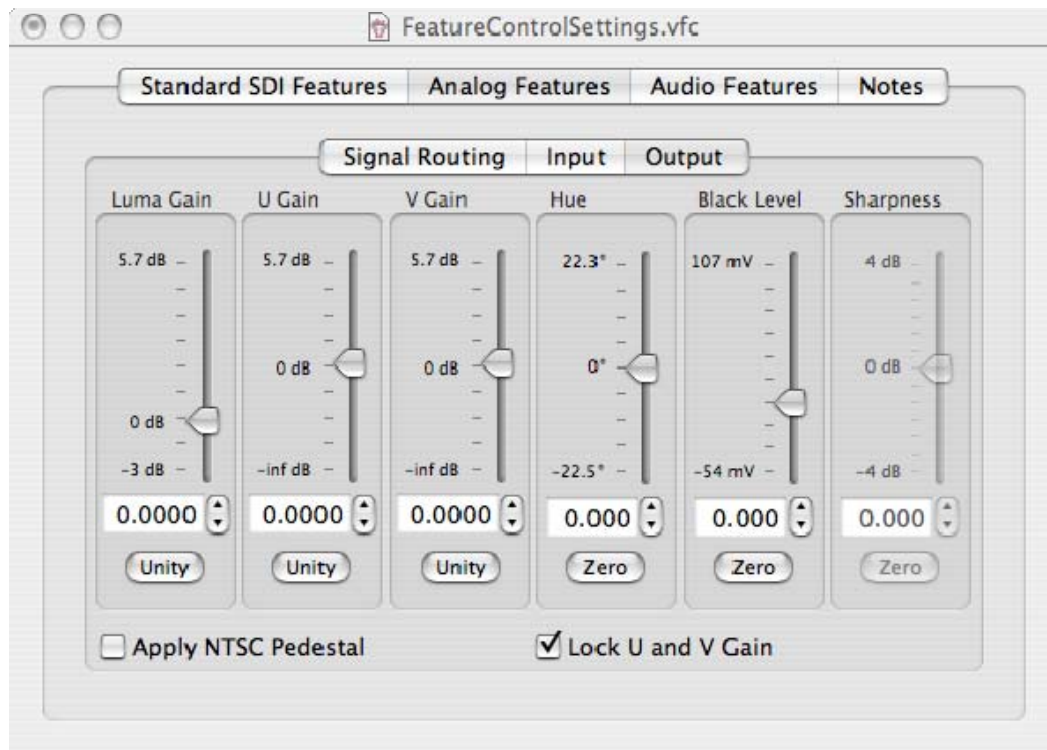
The Bluefish444 SDI/Analog cards feature the highest quality 12 bit processing allowing adjustment of the output signal. By using the vertical slider bars on this tab you can adjust various parameters for the output and save them as the default load up values.
The output signal fields that can be adjusted are;

- Luma Gain
- U Gain

- V Gain
- Hue
- Black level
- Sharpness

NOTE; the output setting are preserved independently for each analog signal type e.g. component, composite, S-Video and RGB

Unity
This button centers each slider bar to the default values of 0.0 gain

Zero
This buttons returns the values to zero value

Lock U and V Gain
Checking this box will lock the U and V levels together

Apply NTSC Pedestal
Enable pedestal (setup) feature for NTSC analog decks. This is used to control the black levels for output.

Input Analog Properties

This section allows you to adjust the Analog input properties.
NOTE; the Input setting are preserved independently for each analog signal type e.g. component, composite and S-Video
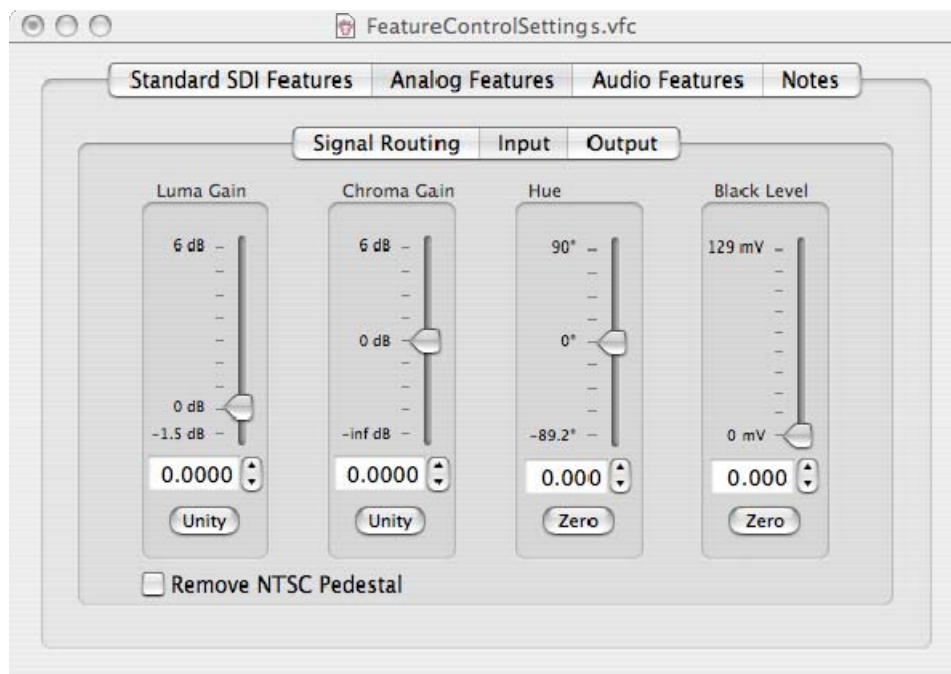
Remove NTSC Pedestal
Removes pedestal (setup) feature for NTSC analog decks. This is used to control the black levels for output.

Signal Routing

Bluefish444 analog cards supports flexible signal routing of the SDI or analog signals to a range of SDI and Analog, component ,composite, S-Video and RGB outputs. Input is selectable between SDI or Analog.
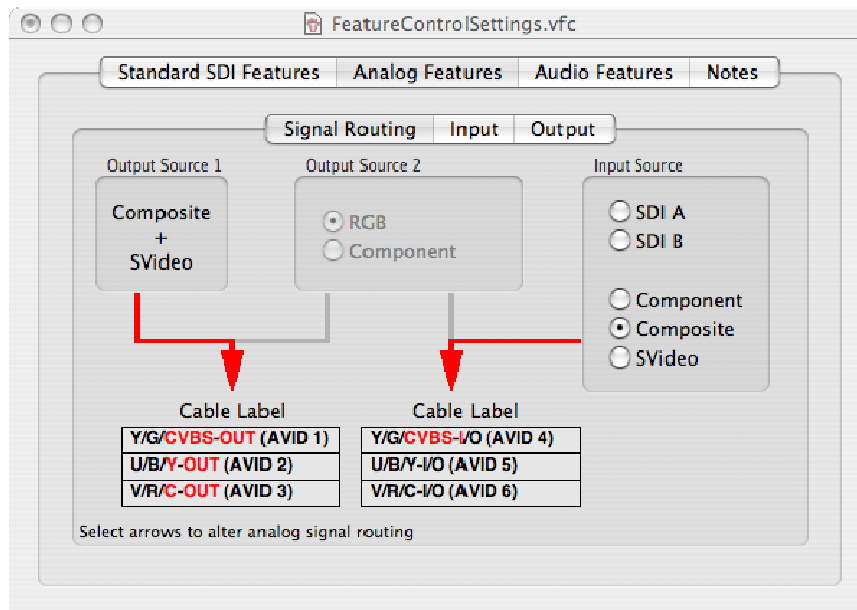
Output can be a combination of SDI and multiple analog outputs.
A few common configuration combination examples are below.

There are many other combinations that are not shown.

Configuration Examples;

Input = Component
Output = SDI + Component
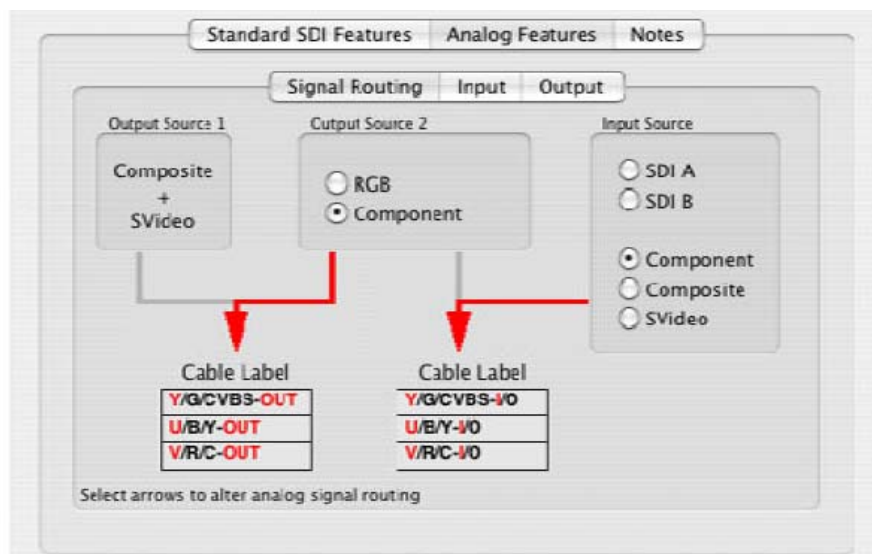
Input = Composite
Output = SDI + Composite + S-Video
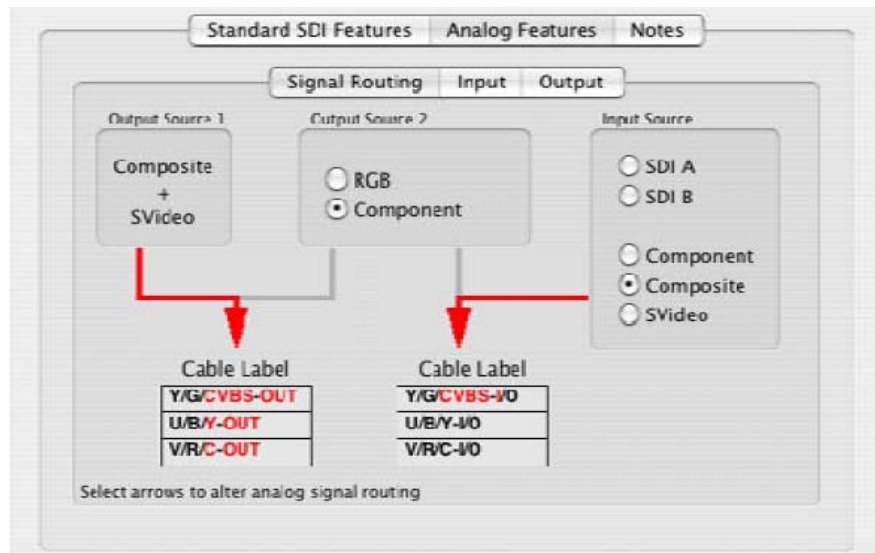
Input = S-Video
Output = SDI + Composite + S-Video
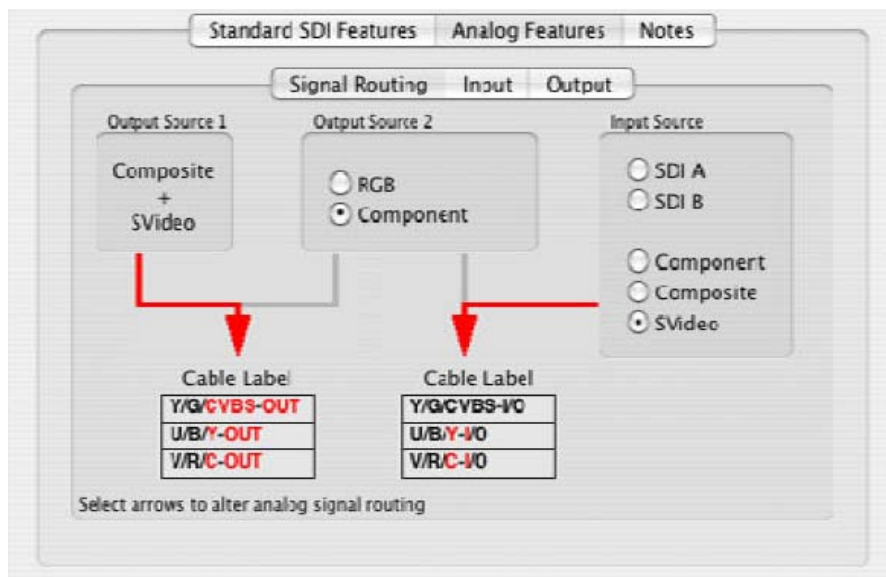
Input = SDI
Output = SDI + Composite + S-Video + Component
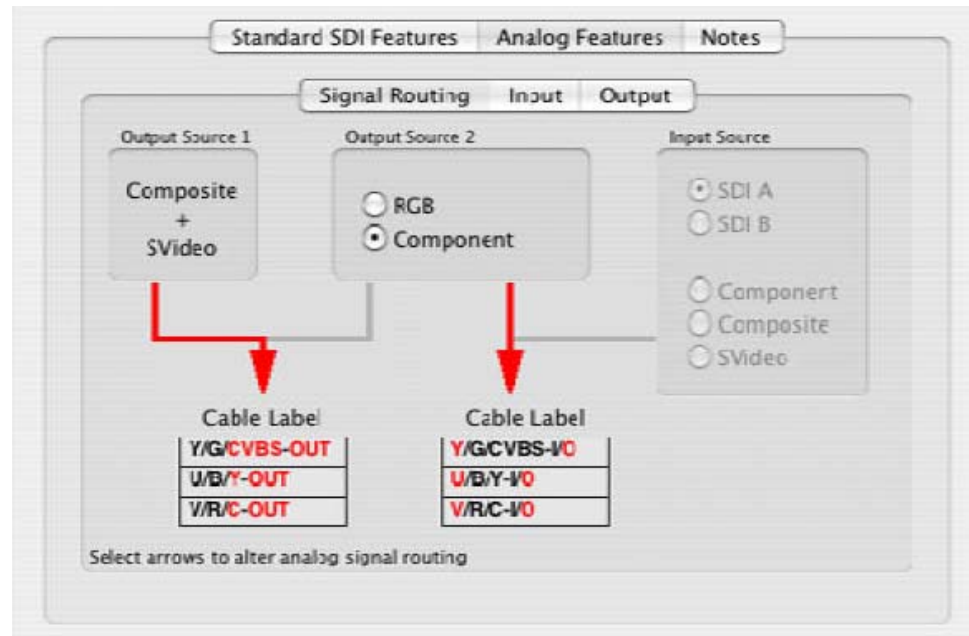
Analog Configuration Guide

The SD| Greed supports an array of configurations that can be selected by using the "Analog output signal type" selector and the "Input signal type" selector.

Numerous combinations are available. In general any of the analog video connectors that are not used as inputs can be used as outputs. Therefore the table below is arranged to show which output signal types will be available given the output signal type that will be used.

For a detailed Color Guide please refer to the SD| Greed Cable guide included in your
SD| Greed box or refer to this manual "SD| Greed Cable Connection Guide".

SD| Greed Analog and Digital I/O Configurations and Labeling Guide			
Input Type	**Output Configurations**		
	Digital	**Analog Set 1**	**Analog Set 2**
SDI DVID 3 or DVID 4	SDI Video + Key SDI Video + Video	Component/RGB (AVID 1,2,3)	Composite (AVID 4) S Video (AVID 5,6)
Component	SDI Video + Key SDI Video + Video	Component/RGB (AVID 1,2,3) Or Composite & (AVID 1) S Video (AVID 2,3)	**Input** Component (AVID 4, 5,6)
S Video	SDI Video + Key SDI Video + Video	Component/RGB (AVID 1,2,3) Or Composite (AVID 1) & S Video (AVID 2,3)	**Input** S Video (AVID 5,6)
Composite	SDI Video + Key SDI Video + Video	Component/RGB (AVID 1,2,3) Or Composite (AVID 1) & S Video (AVID 2,3)	**Input** Composite & (AVID 4)

Audio

Depending on the type of Bluefish444 card installed, a range of audio options can be achieved.

The tables outlines the connectively for the audio.

SD|Fidelity, SD|Focus

Type	Connection	Connect Type	Channels	
Digital Audio	External	BNC	8 Channels	I/O
Digital Audio	SDI	BNC	16 Channels	I/O
Digital Audio	External	XLR	6 Channels	I/O
Analog Audio	External	XLR	2 Channels	I/O
Analog Audio	External	RCA	2 Channels	I/O

SD|Prime

Type	Connection	Connect Type	Channels	
Digital Audio	External	BNC	8 Channels	I/O
Digital Audio	External	XLR	6 Channels	I/O

In most cases conditions, applications will automatically select the audio input source, however you may wish to manually select it.
To do so just select the audio input type from the drop down list.

Signal Routing to Analog Audio

With the SD| Greed you can monitor and range of audio channels with the analog audio outputs. For example of you wish to monitor to digital outputs 1 & 2 and wish to route them to the analog pairs for monitoring you simple select AES channels 1 and 2 to route to analog left and right pairs.
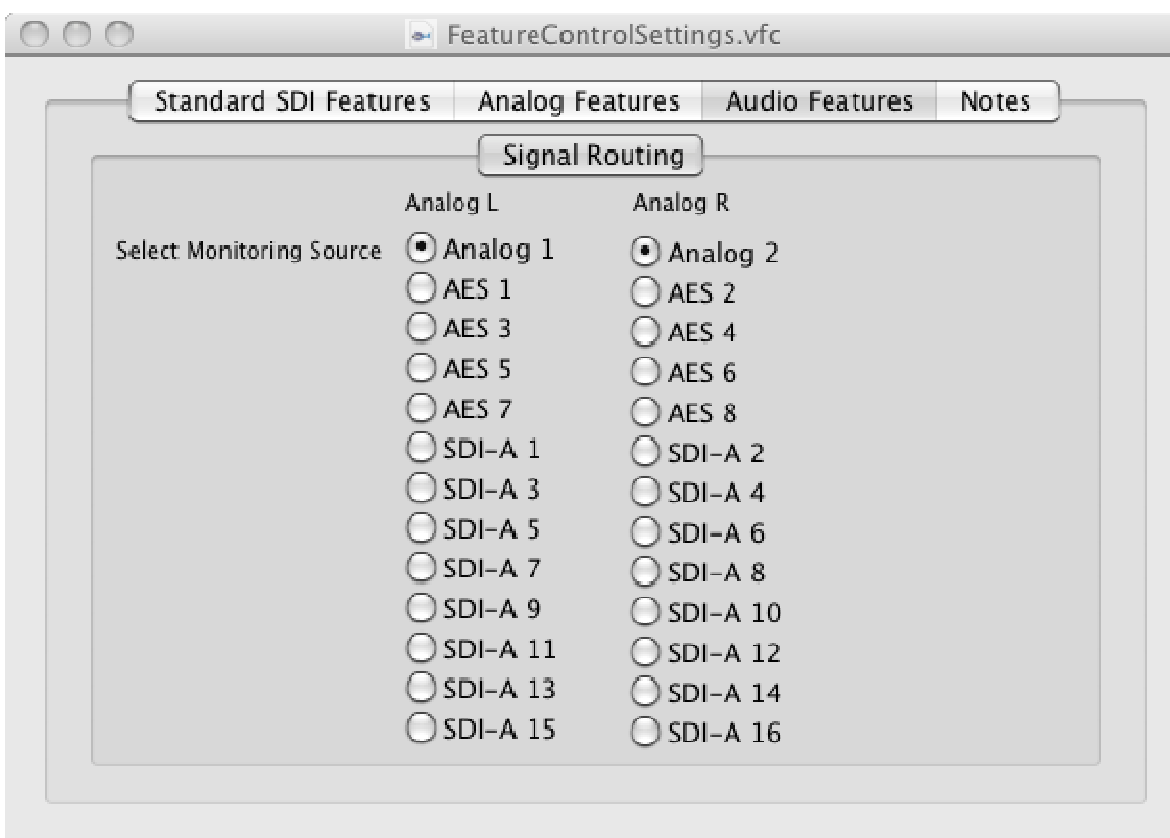
In this example above, Analog L is monitoring Analog channel 1 and Analog Right is monitoring Analog channel 2.

3rd Party Software

Final Cut Pro

Bluefish444 video I/O cards supports the latest version of Final Cut Pro ™.

The best approach to setup your Bluefish444 video I/O card with Final Cut Pro ™ is to select the Easy setup presets available.

Setting up Final Cut Pro with your Bluefish444 hardware

1. Launch Final Cut Pro
2. In the Final Cut Pro menu bar
3. Select Easy Setup
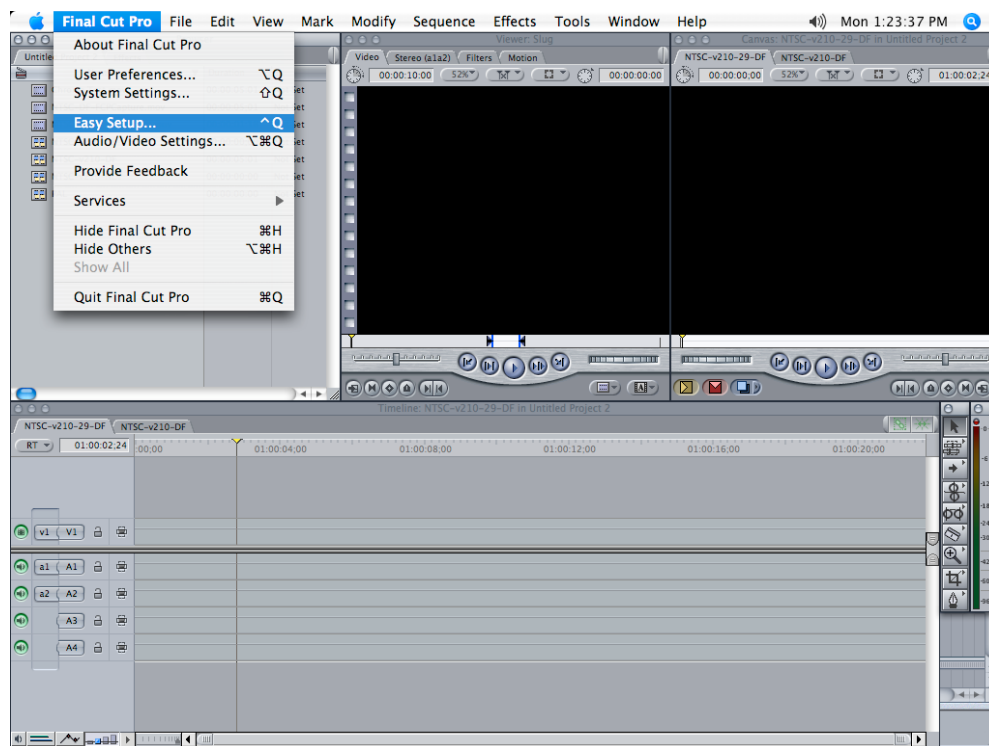
4. In the Easy Setup menu dialog box, select the drop down menu for a list of available presets. Alternatively if you have an older Digital Voodoo I/O card or if you wish to use Digital Voodoo codec's you can select the "Show All" option.

5.   After you have selected the drop down list you will be presented with a range of options to select from.
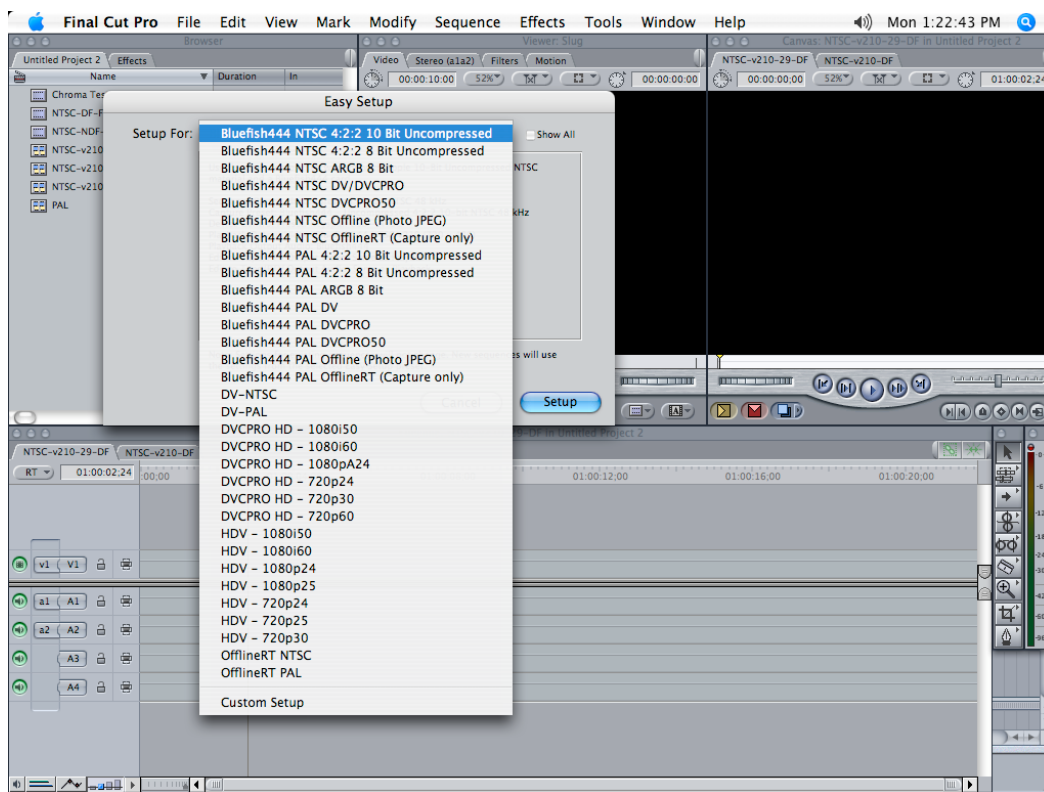
6.   Select Setup, Final Cut Pro will load the relevant settings and place the Bluefish444 card in the mode you have
      selected.

7. You can configure your 3rd party device control settings in the Audio/Video settings menu item of the Final Cut Pro HD menu

8. Final Cut Pro is now Bluefish444 ready.

9. For further information on capture and editing in side FCP ™ please refer to the manuals and documentation supplied by Apple™.

Final Cut Pro Embedded Audio playback

How to configure a sequence in Final Cut Pro to playback audio via the embedded audio channels 11 & 12

1. With a Sequence highlighted, select the Sequence -> Settings menu option
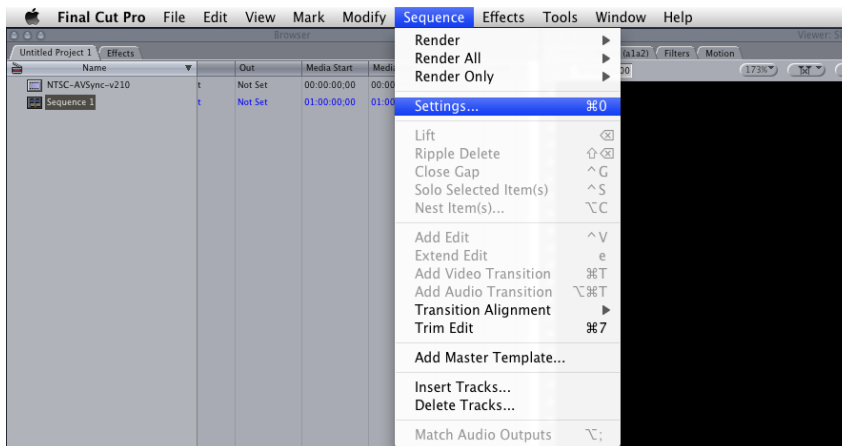
2. On the Sequence Settings dialog, click the Audio Outputs tab.
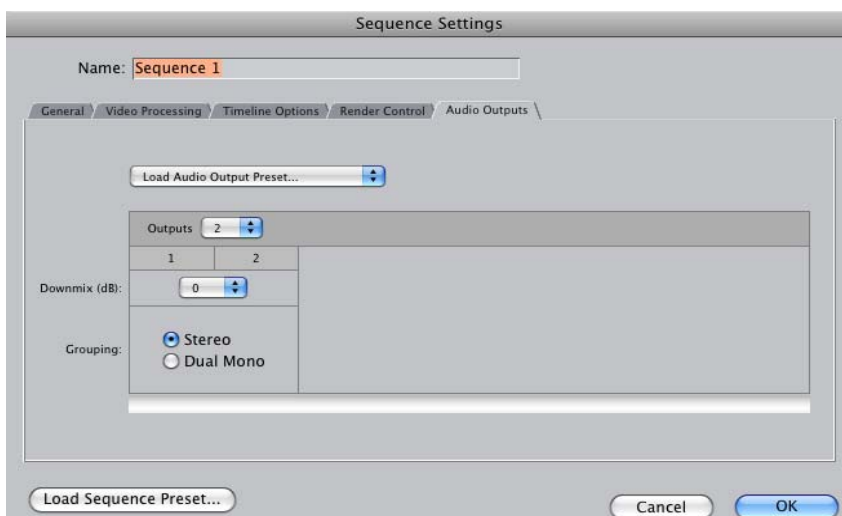
3. Click the Outputs combo box
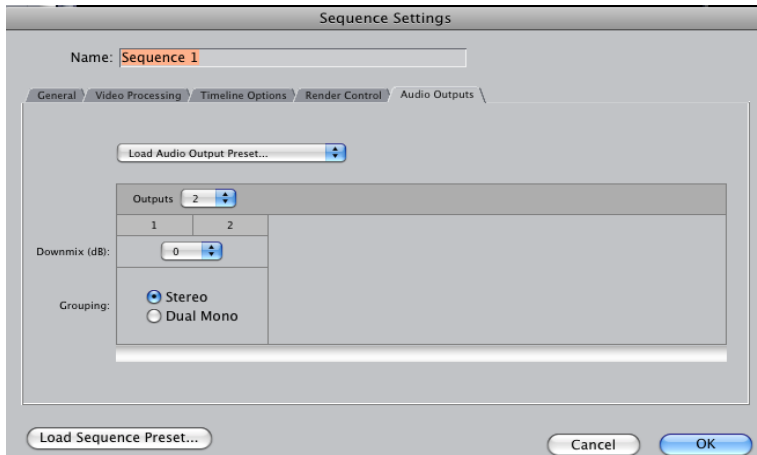
4. Select 24 outputs
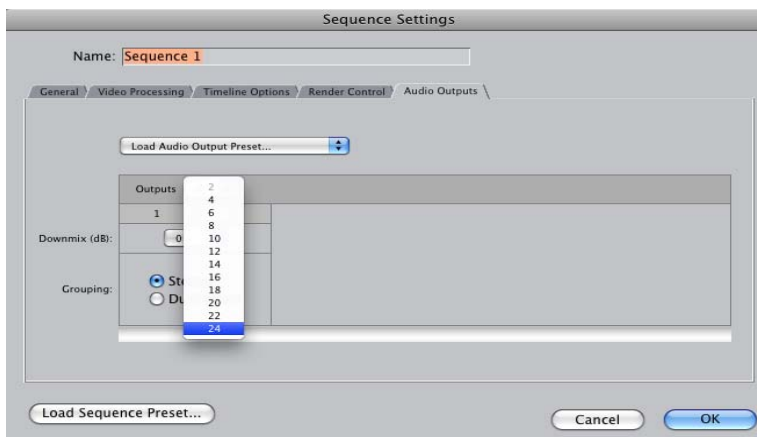
5. On the timeline at the foot of the display, for audio channel A1, control-click the Audio Select icon (the icon to the right of the padlock). Select Audio Outputs -> 11 & 12
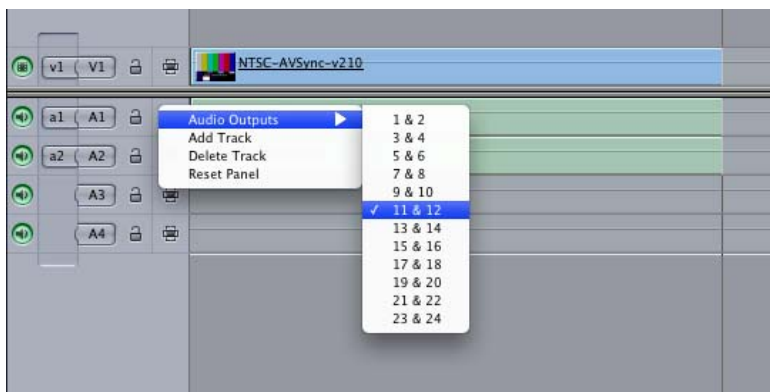
6. On the timeline at the foot of the display, for audio channel A2, control-click the Audio Select icon (the icon to the right of the padlock). Select Audio Outputs -> 11 & 12
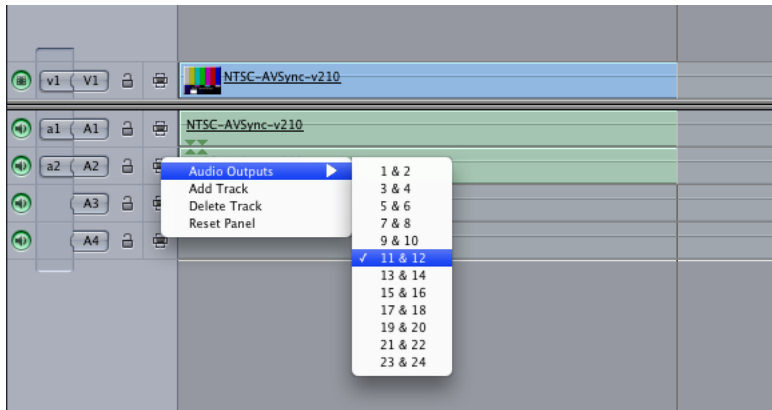
Final Cut Pro Embedded Audio capture

Configure Final Cut Pro to capture embedded audio

1. From the Final Cut Pro menu select Audio/Video Settings
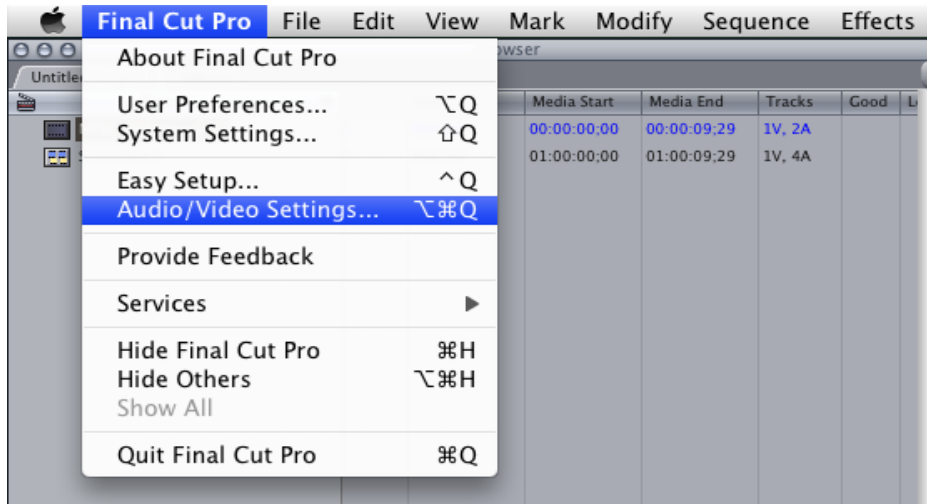
2. On the Audio/Video Settings dialog, pick the appropriate format capture preset
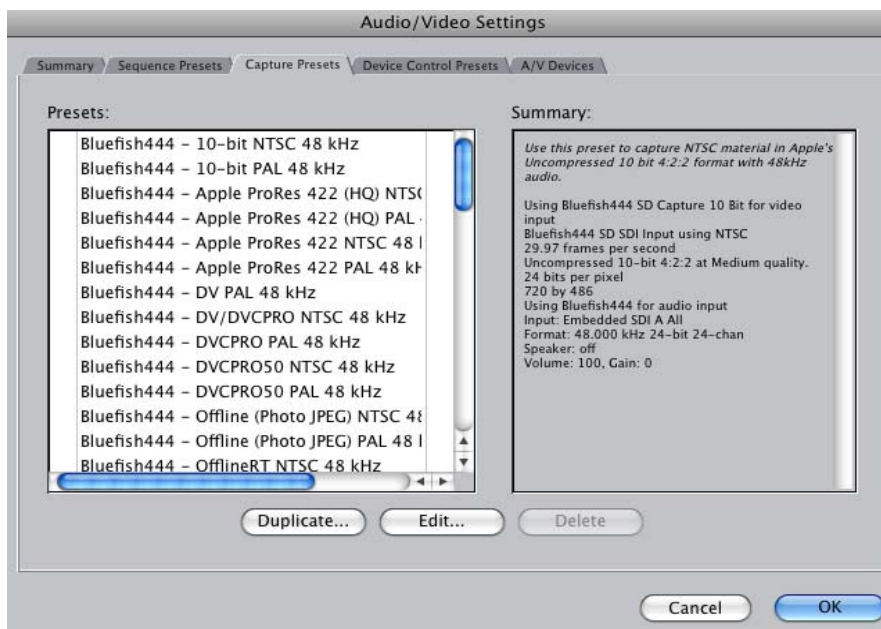
3. Click Edit

4. In QuickTime Audio Settings, click the Input combo box
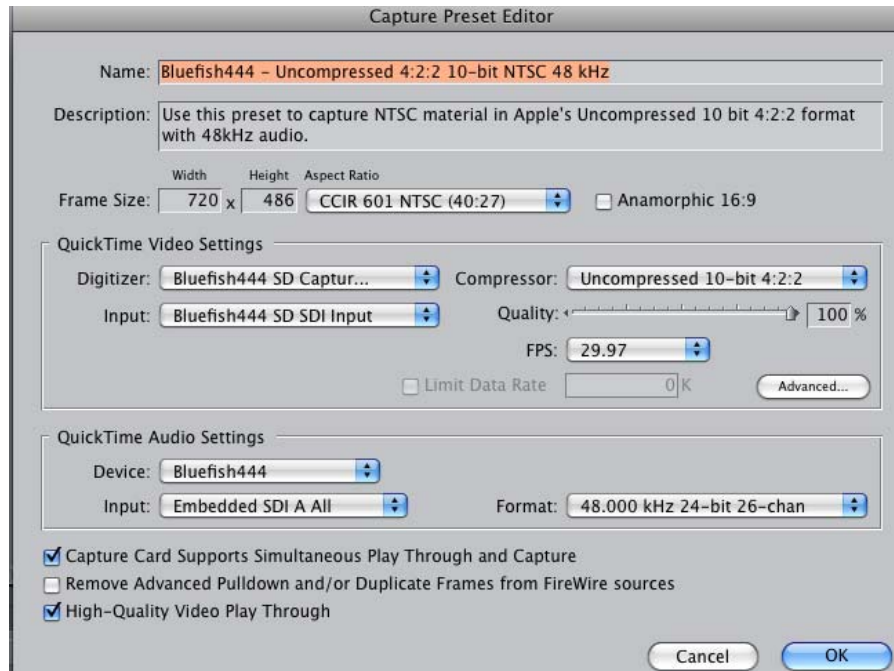
5. From here you can select either Analog, SDI or AES/EBU audio from the combo box
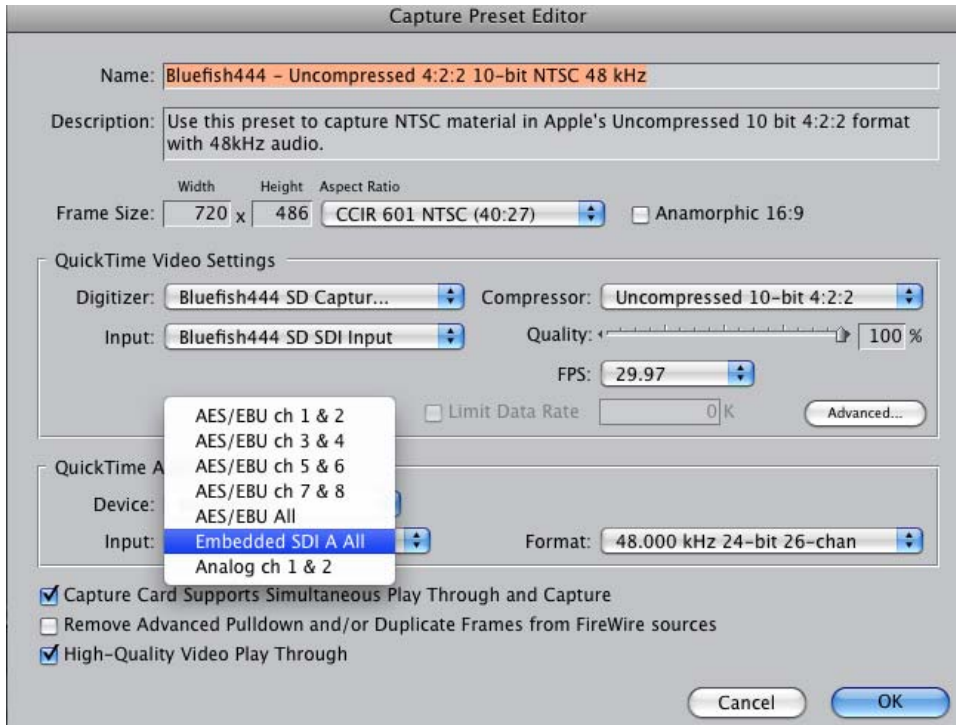
6. Once the QuickTime audio input is selected, Specify the audio channels you wish to capture within the Final Cut Pro interface.
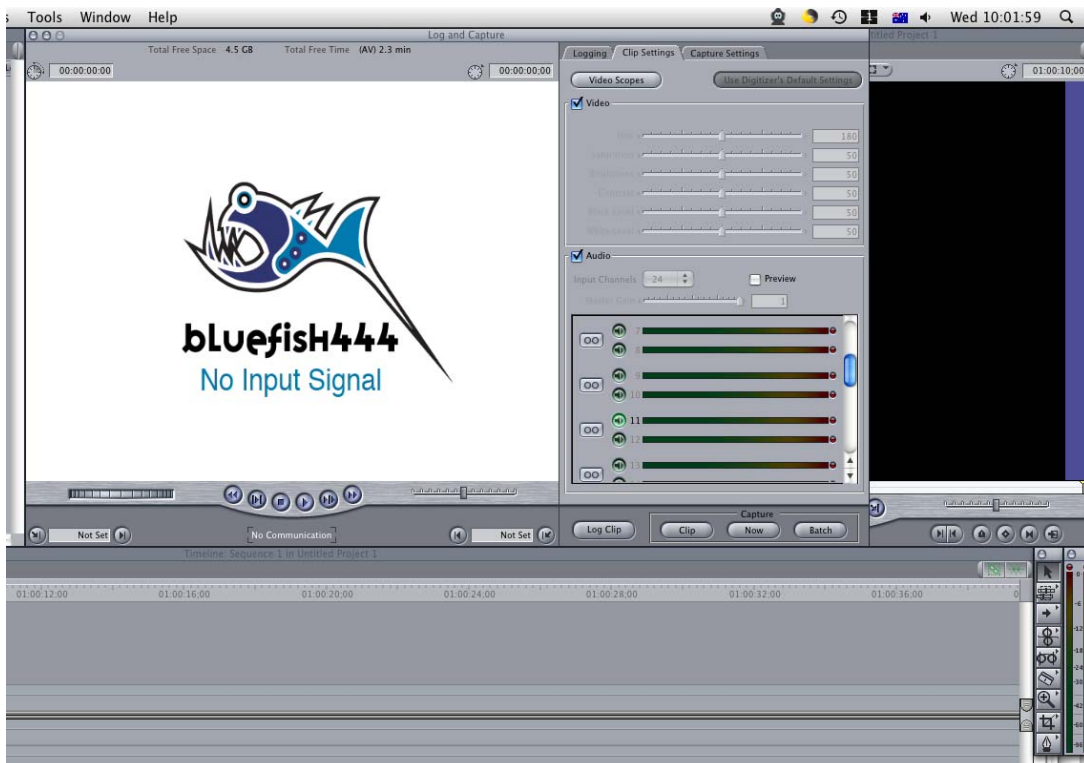
7. Open the Log & Capture window and in Clip Settings, enable the appropriate number of embedded audio channels (11-24).

Screen shot shows 4 selected channels for embedded audio: 11,12,13,14.

8. To prevent capturing silence from the AES channels, disable channels 1 & 2
    To capture AES (referring to Picture 7 when AES is set in the Audio/Video Setting capture preset) re-enable 1 & 2

NOTE
We recommend that when capturing embedded audio, you disable the AES and Analogue channels.
Capturing on AES, Analogue and Embedded simultaneously is not supported and are required to be disabled.

FCP Audio Channel Support

SD| Fidelity

	Input	Output
AES EBU External	1-8	1-8
Analog	9-10	9-10
SDI	11-26	11-26
	Note; Final Cut can only supports 24 Channels of audio	

SD| Focus

	Input	Output
AES EBU External	1-8	1-8
Analog	Not Supported	9-10
SDI	9-24	11-26
	Note; Final Cut can only supports 24 Channels of audio	

SD| Prime

	Input	Output
AES EBU External	1-8	1-8
Analog	Not Supported	Not Supported
SDI	9-24	9-24
	Note; Final Cut can only supports 24 Channels of audio	

Creating your own presets in Final Cut Pro

If you wish to create your own presets (or if you are in a NON English speaking locale) the audio/video settings or each of the presets are configured as follows.

Final Cut Pro settings

Should you need to configure Final Cut Pro's Audio/Video settings manually, the recommended settings (from Final Cut Pro 5) are displayed below.

On some non-English language systems, the Final Cut Pro *Easy Setup* files installed may not work correctly. In these cases, you will need to configure the *Audio/Video Settings...* manually (according to the diagrams below). You can then create your own *Easy Setup* by choosing the *Create Easy Setup* button.

There are dozen of examples, we display a couple as a guide

Bluefish444 PAL 4:2:2 8 Bit Uncompressed
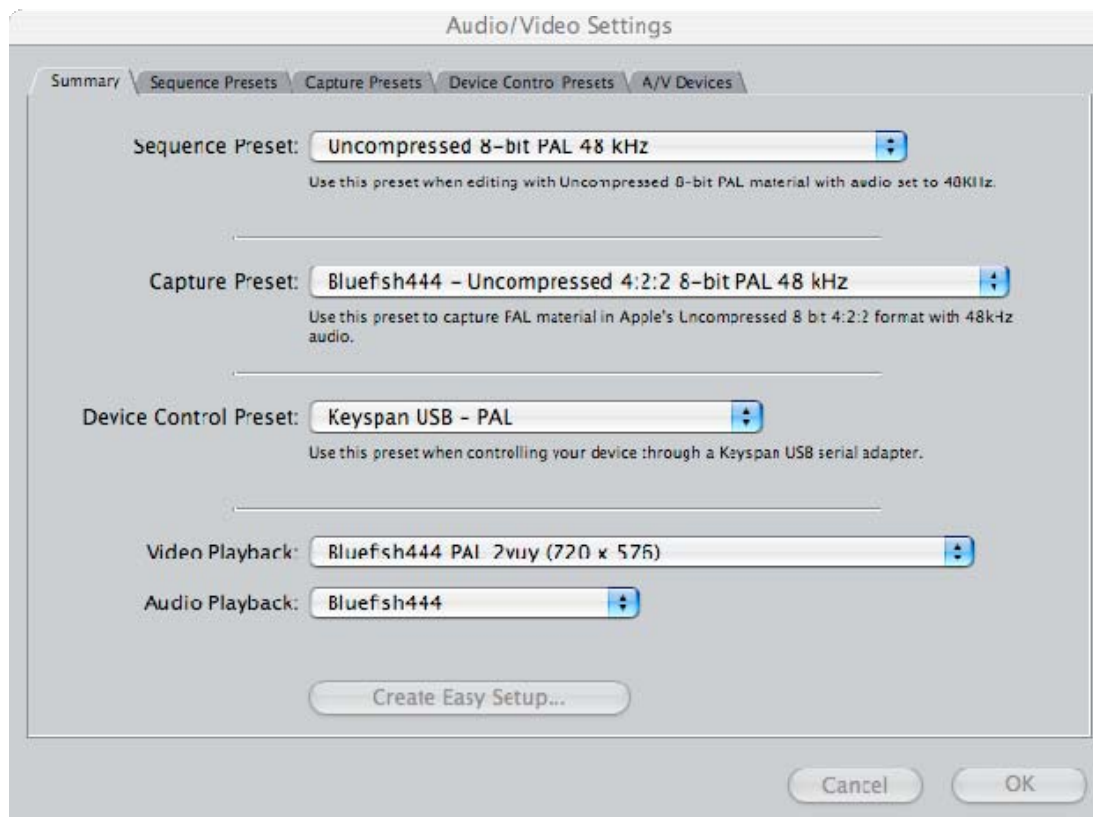
Bluefish444 NTSC 4:2:2 10 Bit Uncompressed

Adobe After Effects

Bluefish444 supports Adobe After Effects on Windows and the Mac OS X.

Bluefish444 supports real time video output of After Effects composite window. Real-time playback of layers and effects can be achieved via the RAM preview playback.

Setting up After Effects with your Bluefish444 hardware.

1. Launch After Effects
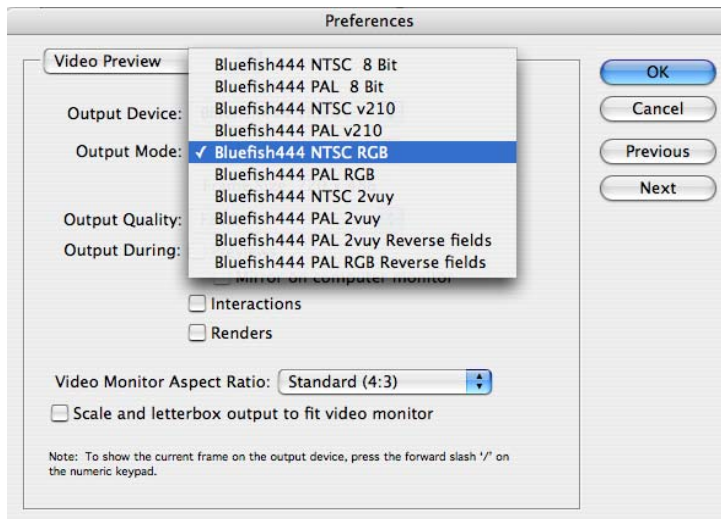2. Select the After Effects menu item
3. Select Video Preferences
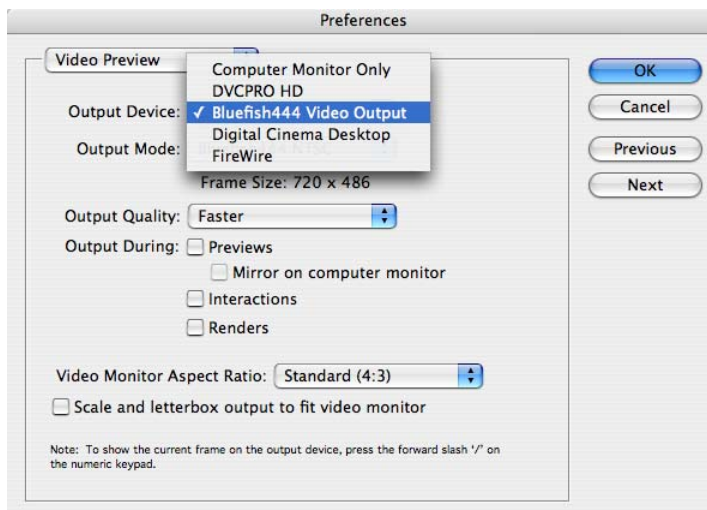
4. Select Video Preview
5. Select Bluefish444 Video Output
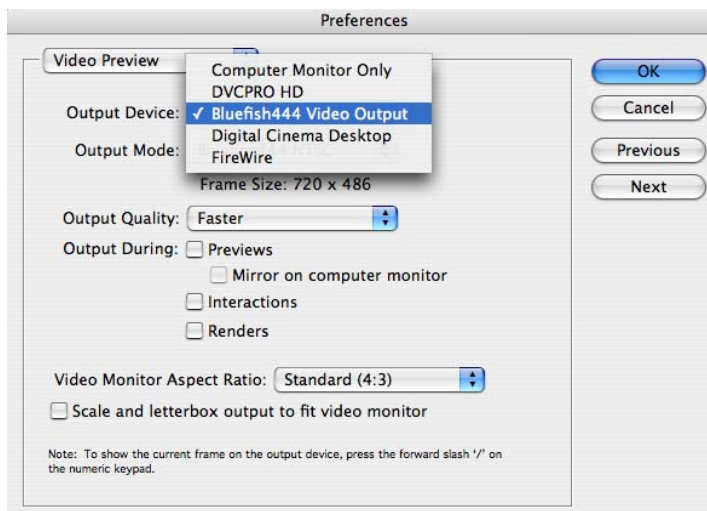
6. You will be presented with a range of 8 and 10 bit output options that are selectable, select the desired RGB output for your project.

Combustion 4

Bluefish444 supports Autodesk Combustion for video preview output for both Windows and Mac OSX.

The difference between the two versions is that Mac OS X version supports the QuickTime component API where the Windows uses the Combustion API.

Setting up Combustion with your Bluefish444 hardware

1. Ensure the Bluefish444 MAC OSX driver and your Bluefish444 hardware is correctly installed
2. Launch Autodesk Combustion
3. In the Combustion menu bar, select Preferences
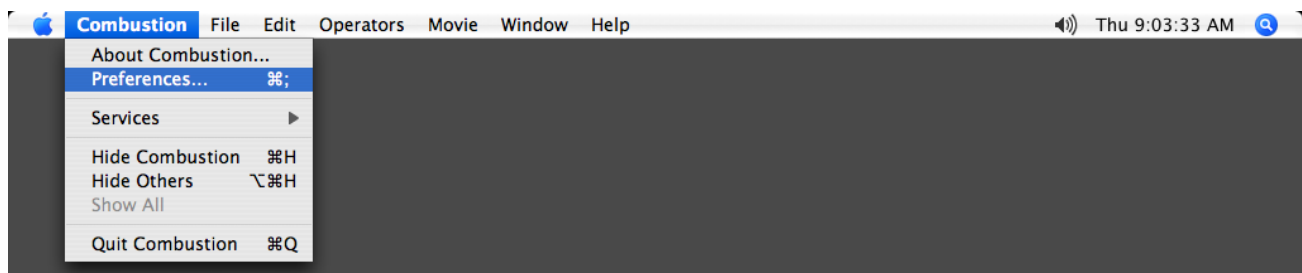
4. Select Fame buffer under the Host Menu
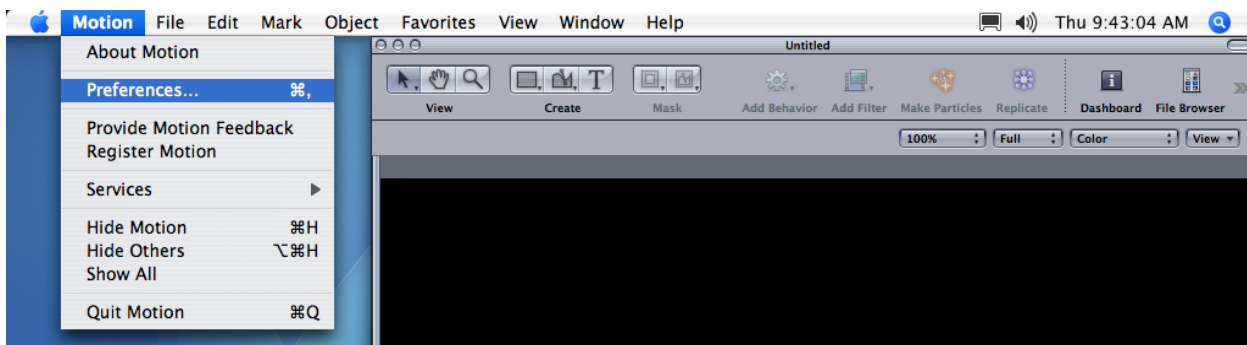5. select the available Bluefish444 options

Motion 2

http://www.apple.com/finalcutstudio/motion/
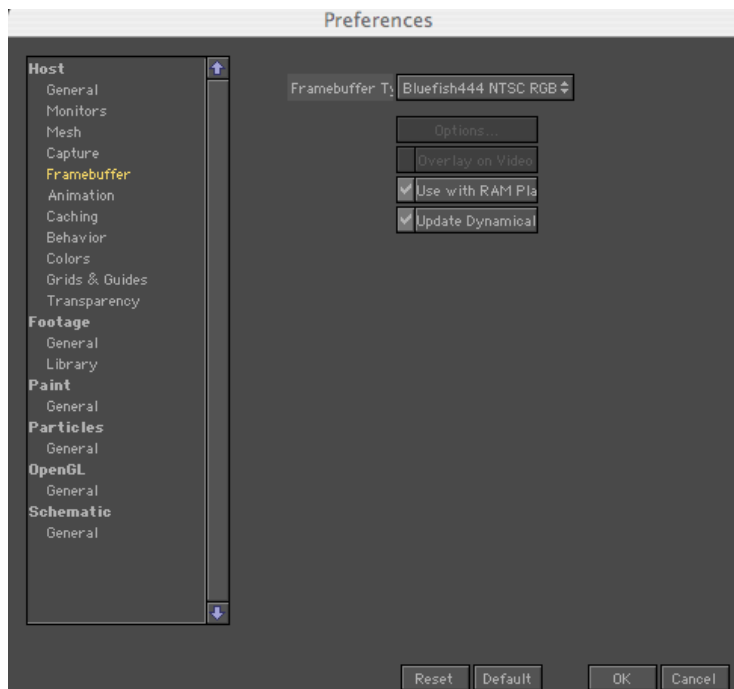
Bluefish444 supports SD video preview output for Motion and Motion 2

Setting up Motion 2 with your Bluefish444 hardware.

1. With Motion launched, select Motion in the menu Tab
2. Select Preferences

3. Select Output preferences
4. In the Video Output, select the Bluefish444 video output you require.
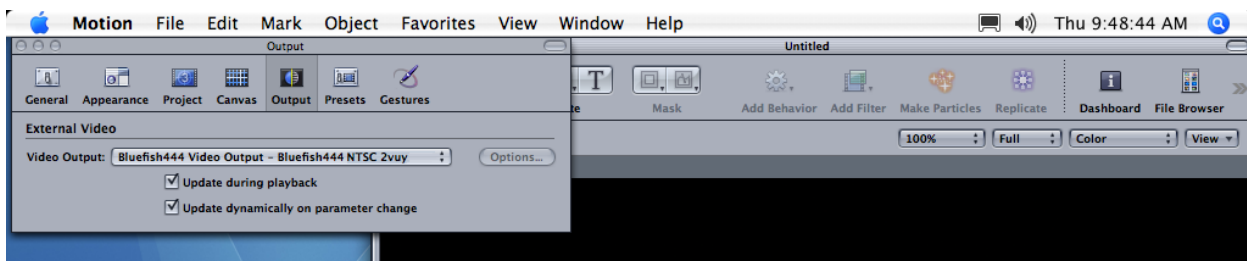
Soundtrack Pro

Bluefish444 hardware can also utilize the Video and Audio outputs to monitor Video and Audio tracks from Sound track pro. This is simply selected by selecting the Video mode you are working with.

Setting up Soundtrack Pro with your Bluefish444 hardware.

1. With Soundtrack Pro launched, select SoundTrack Pro on the menu bar
2. Select Preferences
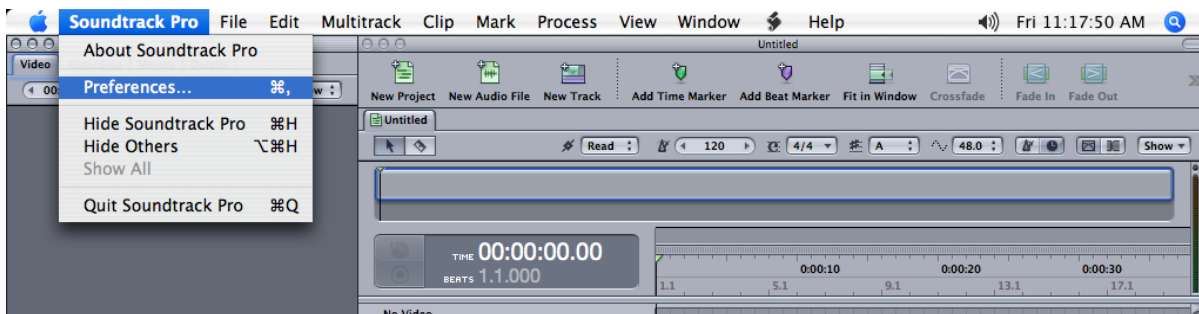
3. Select Video Out Preference
4. In Video Output Device, select the video mode you wish to monitor